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Index to Gleanings in Bee Culture

VOLUME L

In using this index the reader should not fail to note that it is divided into five departments, namely, General, Editorial, A. I. Root's writings, Contributors and Illustrations. The index of General includes everything except Editorials, Illustrations and A. I. Root's writings.

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Agricultural
College

Gleanings in Bee Culture

The speckled sky is dim with snow,
The light flakes falter and fall slow;
Athwart the hilltop, rapt and pale,
Silently drops a silver veil,
And all the valley is shut in
By flickering curtains gray and thin.
On turf and curb and bower-roof
The snow storm spreads its ivory woof.

* * * * * *

The hooded beehive, small and low,
Stands like a maiden in the snow;
All day the blasted oak has stood
A muffled wizard of the wood;
Garland and airy cap adorn
The sumac and the wayside thorn,
And clustering spangles lodge and shine
In the dark tresses of the pine.

Trowbridge.

1922
JANUARY
Vol. L No. 1

LOWER PRICES

Pending the publication of our new catalog, send us your lists of requirements of bee supplies and we will quote you our new prices. New catalog out January, 1922, mailed on application.

THE MILLER BOX MANUFACTURING CO.
LOS ANGELES, CALIF.

"Griggs saves you freight."

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Honey, New Crop

Send sample and say how much you have, kind, how packed, and price asked in first letter.

Beeswax always wanted.

THE GRIGGS BROS. CO.
Dept. 25 Toledo, O.

"Griggs saves you freight."

Changes in Personnel

Effective January 1, Mr. A. L. Boyden, formerly sales director and secretary of the A. I. Root Company of Medina, Ohio, will have full charge of The A. I. Root Company of California and make his permanent residence in California. His brothers, Mr. L. W. Boyden and Mr. R. W. Boyden, both having been long associated with the Medina organization, will be affiliated with the new California Company, the latter taking charge of the San Francisco office in Mr. Bostwick's place.

It is the aim of the new organization on the coast to give better service than ever before to the California beekeepers the year around.

The A. I. Root Co. of California
Los Angeles - - - San Francisco

QUALITY
TIN CANS
FIRST
For PACKERS and MANUFACTURERS of
FOOD PRODUCTS
LARGE CAPACITY
LONG EXPERIENCE
YOUR INQUIRIES SOLICITED
W. W. BOYER & CO. INC.
BALTIMORE, MD.

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SUBSCRIPTION RATES.—One year, $1.00. (Low paid-in-advance subscription rates withdrawn.) Single copy, 10 cents. Canadian subscription, 15 cents additional per year, and foreign subscription, 30 cents additional. **DISCONTINUANCE.**—Subscriptions, not paid in advance, or specifically ordered by the subscriber to be continued, will be stopped on expiration. No subscriber will be run into debt by us for this journal. **CHANGE OF ADDRESS.**—Give your old address as well as the new and write the name to which the journal has heretofore been addressed. **REMITTANCE.**—Should be sent by postoffice money order, bank draft, express money order, or check. **CONTRIBUTIONS** to GLEANINGS columns solicited; stamps should be enclosed to insure return to author of manuscript if not printed. **ADVERTISING RATES.**—Advertising rates and conditions will be sent on request. Results from advertising in this journal are remarkably satisfactory. **ADVERTISERS' LIABILITY.**—The publishers use utmost diligence to establish in advance the reliability of every advertiser using space in this journal.
Entered as second class mail matter at the Postoffice at Medina, Ohio. Published monthly. Space occupied by reading matter in this issue, 59.4 per cent; advertising, 40.6 per cent.

THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

Editorial Staff

Geo. S. Demuth and E. R. Root Editors	A. I. Root Editor Home Dept	H. H. Root Assistant Editor	H. G. Rowe M'n'g Editor

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146 Newton Ave. N. and
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MINNEAPOLIS, MINNESOTA.

HONEY MARKETS

U. S. Government Market Reports.

INFORMATION FROM PRODUCING AREAS (FIRST HALF OF DECEMBER).

CALIFORNIA POINTS.—The general situation shows little change over that prevailing two weeks ago. Stocks continue to decrease and are much lighter than were those at the corresponding period last year. Demand is reported as light. Due to light supplies, the market, altho quiet, has a healthy tone. Alfalfa honeys are in heavier supply than white honeys. Quotations per lb. in carlots or less than carlot quantities, f. o. b. California points: White orange blossom, nominally 12-12½c; white sage, 11-12c; light amber sage, 8½c; light amber alfalfa, 6½-6¾c. Growers are said to be asking 10-13c per lb. for white orange blossom and 6½-7c for light amber alfalfa. Beeswax is in fair local demand at present at 20-25c, mostly 22c per lb. to the beekeepers, by bee-supply houses for use in making next season's foundation . Demand from the East is lacking, as imported wax offers too great competition.

INTERMOUNTAIN REGION. — The unusually large volume of Hawaiian honey coming into the country at prices considerably below asking prices for domestic stock is said to have a noticeable effect on the market in this area. Carlot sales of white sweet clover and alfalfa extracted in 60-lb. cans are reported at 8-8½c per lb. with less than carlot sales at 10-11c, and transactions in smaller containers high as 12½-15c per lb. Large lots of No. 1 white comb honey have been sold at $4.25-4.50 per case. Beeswax market is very dull at 22-24c per lb. Many beekeepers are refusing to accept the prices offered by dealers.

SOUTHWESTERN STATES.—Honey movement from Texas is light, as the crop has been largely disposed of. It is reported that the bulk of the Texas honey movement usually occurs between May and August. Demand is fairly good. Prices range 9-12c per lb. for light-colored extracted honey, in less than car lots, and 12-14c per lb. for chunk comb honey. A good demand is experienced for bulk comb honey in 3 and 5-lb. pails. Colonies are in exceptionally good condition. The crop in Salt River Valley, Ariz., is rapidly becoming exhausted. Sales of several cars are reported on a basis of $7.00 per 120-lb. case, or just under 6c per lb. Bees are said to be in excellent condition for the winter.

EAST CENTRAL STATES.—The heavy demand earlier in the fall has absorbed a large part of the crop, and recent shipments have been only moderate. At present the market is rather dull, experiencing a pre-holiday lull, but a brisker demand is looked for earlier in the new year. The present outlook is that the market will be bare before the 1922 crop is ready. Increasing advertising, better financial conditions and shortage of canned fruits are listed as reasons for the improved demand for honey this season over that of last fall. Large lot sales of white clover in 60-lb. cans are firm at 10-12c per lb. with frequent transactions in smaller quantities at 13-15c per lb.

NORTHEASTERN SECTION. — Supplies of both white clover and buckwheat are light, as a result of unusual fall demand. The market price has strengthened slightly, and large lots of white clover in 60-lb. cans are now selling at mostly 10c, some 12c per lb. Comb honey in carlot quantities has been selling at $4.50 for 24-section cases of white clover, $3.50 per case for amber, and $3.00 per case for buckwheat. In smaller quantities, materially higher prices are reported.

WEST INDIES.—Supplies much lighter than normal. Heavy shipments made to Holland at 61c per gallon, including cost and freight.

SOUTHEASTERN STATES.—Best grades extracted and comb already sold; some dark extracted still on hand. Honey movement is slow at 7-12c per lb. for white and light amber. New crop of cane syrup just put on market is responsible in some sections for light demand. Outlook encouraging. Bees strong in brood, but rather light in stores. Very little clustering so far.

TELEGRAPHIC REPORTS FROM IMPORTANT MARKETS.

BOSTON.—Approximately 50 cases Vermont arrived since last report. Trading shows customary seasonal dullness with little buying and prices practically unchanged. Comb: Sales to retailers, Vermont, carton stock 20-section cases No. 1 white clover $6.50-7.00, light low as $5.00. New York, 24-section cases No. 1 white clover $6.00-7.00. Extracted: Sales to confectioners and bottlers, Porto Rico, amber per gal. 80-85c. California, white sage mostly 16c per lb. Brokers nominal less than carlot quotations, delivered Boston basis. California, per lb. white sage 12-13c, light amber alfalfa or sage 9-10c, amber alfalfa or sage 7-7½c.

CHICAGO.—Since last report, 2 cars Arizona, 2,000 lbs. Minnesota and 4,000 lbs. Colorado arrived. Stock moving well from brokers and jobbers to bottlers and confectionery manufacturers but sales to retailers very slow. Market steady. Extracted: Per lb. sales to bottlers and candy manufacturers, Colorado and Arizona white clover 11-12c, light amber alfalfa 9½-10¼c. Michigan, white clover 12-13c. Comb: Sales to retailers, Colorado and Minnesota, 24-section cases No. 1 clover $5.75-6.00; light weight, leaky, and off color stock low as $4.50. Beeswax: Receipts moderate. Demand and movement just fair, market steady. Sales to wholesale druggists, harnessmakers and ship supply houses per lb. Oklahoma, Missouri and Colorado, light 30-32c, dark 26-28c. Central American, best grades light, around 24c.

CINCINNATI.—Since last report, 1 car Wyoming arrived.

MINNEAPOLIS.—Since last report, 1 car Wisconsin arrived. Demand and movement light, market steady. Comb: Supplies liberal. Sales direct to retailers, 24-section cases, Colorado, Idaho and Utah, alfalfa and sweet clover mixed No. 1, $6.50, few $7.00. Minnesotas and Wisconsin, No. 1, $6.50. Extracted: Sales direct to retailers, confectioners and bakers, Colorados and Utahs, alfalfas and sweet clover mixed, white 13-15c per lb.

NEW YORK.—Domestic receipts moderate, foreign receipts limited. Supplies moderate. Demand limited, market dull. Extracted: Spot sales to jobbers, wholesalers, confectioners, bakers and bottlers, domestic, per lb. California, light amber alfalfa 8-9c, light amber sage 9-10c, few 11c; white sage 10½-12c, white orange blossom 12-13c, few 14c. New York, white clover 9-10c, buckwheat 7-8c. West Indian, refined 65-70c per gal. Comb: Few sales, New York and Western, 24-section cases white and light amber clover, best $7.00-8.00, fair $6.00-7.00, buckwheat $4.00-5.00. Beeswax: Foreign receipts moderate. Supplies moderate. Demand limited, market steadq. Spot sales to wholesalers, manufacturers and drug trade, South American and West Indian, crude light, best 21-23c, poorer low as 18c, dark mostly 15c. African, dark, 13½-15c.

PHILADELPHIA.—Since last report, 3,000 lbs. Porto Rico arrived. Demand very slow, market slightly weaker, with very few sales. Extracted: Sales to jobbers and bakers, Porto Rico, light amber various flavors 74¢ per gal. No other sales reported. Beeswax: Supplies light, but sufficient to meet demand. Very little trading, no change in prices. Sales to manufacturers, per lb. crude, medium Chilean 22c, Brazilian 21c, African, dark 14-15c.

H. C. TAYLOR,
Chief of Bureau of Markets.

From Producers' Associations.

While the price of honey remains the same, there is a somewhat less demand, caused, it is supposed, by the Christmas season. Bulk comb honey is practically off the market, and only moderate supplies of extracted are available. The holiday trade has caused an increase in parcel post packages of extracted honey and section comb. Inquiries from jobbers indicate the demand for honey is yet strong. Producers are yet receiving 8 to 9 cents for extracted 60-pound basis and 12 to 14 cents for bulk comb. Bees and honey plants are in fine shape generally. In a few localities where, on account of drought, no fall flow occurred, feeding and uniting are the order of the day.

Texas Honey Producers' Ass'n.
San Antonio, Tex. E. G. LeStourgeon.

The demand for extracted honey in carload lots is quite satisfactory, and it does look now that good white table stock would be used up before a new crop comes on to the market. Comb honey is moving somewhat slower.

The Colorado Honey Producers' Ass'n.,
Denver, Colo., Dec. 6. F. Rauchfuss, Sec.

Special Foreign Quotation.

CUBA.—Today's prices in Cuba are: Honey, 42 cents a gallon; wax, 20 cents a pound.

Matanzas, Cuba. A. Marzol.

Airline Honey Quotations.

The A. I. Root Company, beginning with the February number of Gleanings in Bee Culture, will quote its prices for honey as it finds its need demands in packing the Airline brands. These quotations are not made this month because of the uncompleted work resulting from a reorganization of the Airline department of our company.

H. H. ROOT,
General Manager, The A. I. Root Co.

The Opinions of Honey Producers Themselves as Reported to Gleanings in Bee Culture.

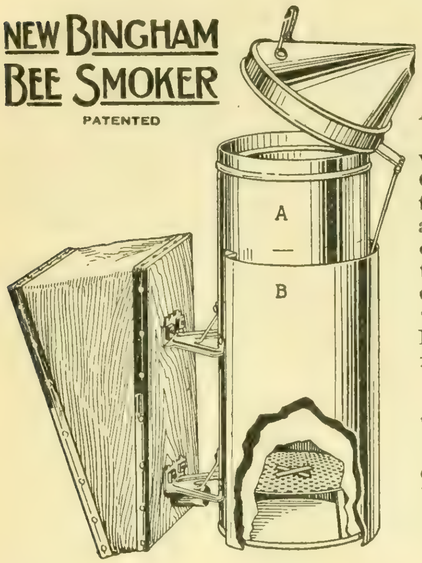
Early in December we sent to actual honey producers and some associations the following questions:

1. What portion of the 1921 honey crop is still in the hands of producers in your locality? Give answer in per cent.
2. What price are producers receiving for honey at their station when sold to large buyers? (a) Comb honey? (b) Extracted honey?
3. What are prices to retailers in small lots? (a) Comb honey, fancy or No. 1 per case? (b) Extracted honey in five-pound pails or other retail packages?
4. How is honey now moving on the market in your locality? Give answer in one word as slow, fair or rapid.
5. How much of the 1921 crop of honey is being sold locally this season in your locality? Give answer in per cent.

The answers as returned by our corps of honey and bee reporters are as follows:

States.	Reported by	Crop Unsold.	In large lots.		To Retailers.		Movement.	Sold Locally.
			Comb.	Extracted.	Comb.	Extracted.		
Alabama.	J. M. Cutts	40		$.08		$ .50	Slow	90
Alabama.	J. C. Dickman	25				1.00	Fair	90
Arkansas.	J. Johnson	25			$6.00		Slow	50
British Colum.	W. J. Sheppard	15		.28		1.75	Fair	100
California.	L. L. Andrews			.12		1.00	Fair	10
California.	M. A. Sayler	20	$3.00	.08	3.60	.75	Fair	50
California.	M. H. Mendleson	0			6.50		Fair	5
Colorado.	J. A. Green	5	4.60	.08	4.80	.65	Fair	5
Colorado.	B. W. Hopper	0	5.00	.09	6.00	.80	Slow	10
Connecticut.	A. W. Yates	40	6.00	.15	8.00	1.00	Slow	100
Florida.	H. Hewitt	10		.10		.85	Fair	90
Florida.	W. Lamkin	20		.08		.75	Fair	50
Florida.	C. C. Cook	50	3.60	.10	4.80	.75	Fair	75
Georgia.	J. J. Wilder	65		.10		.75	Slow	85
Illinois.	A. L. Kildow	30	5.25	.12	6.00		Fair	10
Illinois.	C. F. Bender	0			6.50		Slow	90
Indiana.	T. C. Johnson	5			6.00	1.00	Fair	100
Indiana.	Jay Smith	10				1.35	Fair	75
Indiana.	E. S. Miller	45			6.00	1.00	Fair	100
Iowa.	E. G. Brown	25		.11	6.00	.90	Rapid	25
Iowa.	F. Coverdale	0					Fair	0
Iowa.	W. S. Pangburn	50		.14		.90	Slow	30
Kansas.	J. A. Nininger	0			6.00	.75	Fair	
Kansas.	C. D. Mize	25			6.75	.75	Fair	100
Louisiana.	E. C. Davis	25	6.00	.08	6.00	.50	Fair	75
Maine.	O. B. Griffin		6.75		7.20		Fair	
Maryland.	S. J. Crocker, Jr				5.25	1.00	Fair	75
Massachusetts.	O. M. Smith						Slow	100
Michigan.	E. G. Norton	20		.08		.60	Slow	12
Michigan.	F. Markham	10		.12	6.00	.85	Fair	90
Michigan.	E. D. Townsend	20		.13		1.25	Rapid	10
Michigan.	I. D. Bartlett	12				.55	Fair	75
Mississippi.	R. B. Willson	40	4.75	.10	5.75	.95	Fair	50
Missouri.	J. W. Romberger	0	6.75	.14	6.00		Slow	100
Montana.	R. A. Bray	30	5.50	.10	6.00	.80	Fair	25
Nevada.	L. D. A. Prince	0					Fair	100
New Jersey.	E. G. Carr	20			6.50	.80	Fair	10
New York.	Adams & Myers	20			6.50	1.00	Fair	90
New York.	F. W. Lesser	2	5.00	.10	6.00	1.00	Fair	5
New York.	G. Howe					1.15		97
North Carolina.	C. S. Bumgarner					1.00	Slow	100
North Carolina.	W. J. Martin	10	6.00	.13	8.40	1.25	Slow	100
Ohio.	E. G. Baldwin	40	4.75	.07	6.75	.90	Fair	40
Ohio.	R. D. Hiatt	15			6.00	1.15	Fair	100
Ohio.	J. F. Moore	10		.12		.80	Fair	10
Oklahoma.	J. Heueisen	0				1.25	Fair	100
Oklahoma.	C. F. Stiles	0					Fair	100
Oregon.	E. J. Ladd	20			6.00	1.00	Fair	100
Oregon.	H. A. Scullen	20			6.00	1.00	Fair	100
Pennsylvania.	D. C. Gilham	30			7.00	1.25	Fair	90
Pennsylvania.	C. N. Greene	33	6.25	.10	6.50	.75	Rapid	90
Pennsylvania.	H. Beaver	40		.09		.70	Fair	20
Rhode Island.	A. C. Miller	0				1.50	Fair	100
Texas.	J. N. Mayes	5	3.36	.10		.60	Rapid	40
Texas.	T. A. Bowden	20				.80	Slow	100
Texas.	H. B. Parks	10				.70	Fair	65
Utah.	M. A. Gill	0			4.50	.65	Fair	80
Virginia.	T. C. Asher	10				1.25	Fair	75
Washington.	G. W. York	50	5.50	.11	7.20	.95	Slow	50
Washington.	G. W. B. Saxon	75		.16			Slow	
West Virginia.	W. C. Griffith	3	8.00	.15	8.50	1.25	Fair	100
Wisconsin.	N. E. France	10			6.00	.75	Fair	95
Wisconsin.	E. Hassinger, Jr.	5				.85	Rapid	90
Wisconsin.	G. Dittmer	75		.12		.75	Slow	50
Wisconsin.	H. F. Wilson	7	6.85	.13	7.00	.95	Rapid	95

Bingham's Big Smoke Smoker



Wins Contest at New York State Beekeepers' July Meeting.

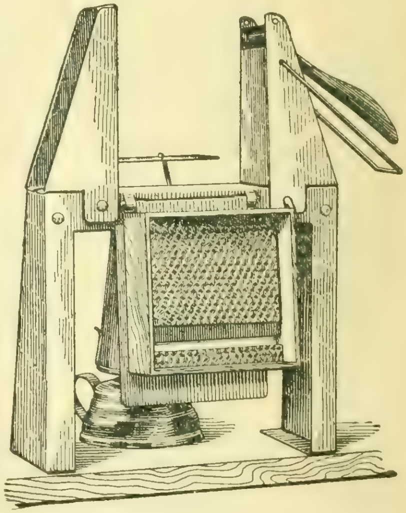
Gilbertsville, N. Y., Oct. 3rd, 1921.

A. G. Woodman Co.:

Last winter I bought a copper Big Smoke Smoker with shield of you and in July took the same to the Chenango County beekeepers' picnic and entered the Smoker contest. There were nine contestants and the Big Smoke won the prize, which was a fine queen bee. Needless to say, I was very proud of the victory. They gave us one minute, and at the expiration of thirty-five minutes the Big Smoke was the only one burning. They called it "Steam Boiler." However, it won and thought I would inform you. C. F. Bushnell.

The contestants were allowed to use any fuel they desired and as much or as little of it as thought advisable. The contestants were given one minute in which to light their smokers, then let set for thirty minutes. At the end of this period, the one that smoked best in thirty seconds won the prize.

Buy Woodman Section Fixer



One of our men, with the Section Fixer, puts up 500 sections with top starters, in one hour and thirty minutes, 500 sections set up with top starters in ninety minutes. This includes the labor of cutting foundation, getting sections and supers and placing the sections into the supers and carrying them away. A complete job. This is nothing unusual, but his regular speed. You can do the same if you have the push after you become accustomed to the work. There is no breakage of sections. It will pay you to secure one of these machines for this work. It is the best thing of the kind on the market.

Special Sale on Honey Packages

Friction-top Pails in the 5-pound at $7.00 per crate of 100; $13.00 for crates of 203; the 10-pound size at $11.30 for crates of 113. Special prices on 60-pound cans, one-gallon square cans, and other sizes.

A. G. WOODMAN CO., Grand Rapids, Michigan

QUEENS Package Bees and Nuclei QUEENS

Have a special offer to Beekeepers' Associations or groups of beekeepers that can use a car of bees at a time, 800 to 1000 packages. We are prepared to load 2 cars a week after April 5th, 1922. Free ticket to the party coming down to go back with the car or I can furnish a man. This is the best way; no transferring from one car to another; bees go through in 3 to 4 days. Also special attention given to small orders.

1922 PRICES. BOOKING ORDERS NOW. SAFE ARRIVAL GUARANTEED.

1-pound package	$2.25 each;	25 or more	$2.15 each
2-pound package	3.75 each;	25 or more	3.60 each
3-pound package	5.25 each;	25 or more	5.00 each
2-comb nuclei	3.75 each;	3-comb nuclei	5.25 each

(Add price of queen wanted.)

1 Untested Queen	$1.50 each;	25 or more	$1.30 each
1 Select Untested	1.70 each;	25 or more	1.50 each
1 Tested	2.25 each;	25 or more	2.00 each
1 Select Tested	2.65 each;	25 or more	2.25 each

One-fifth down with order, balance just before shipping; or 4% discount for full remittance for December, and 3% for January orders.

THE NUECES COUNTY APIARIES, CALALLEN, TEXAS

E. B. AULT, PROP.

17,203 Italian Queens

for 1921 and orders for many more turned down. We do not tell you this in a boasting way, but rather to show our customers what they have helped us to accomplish. If we did not have really **SUPERIOR ITALIAN STOCK** could we have sold that many and had so few complaints, or could we have built our queen business from nothing to that in eight years, if we had not given value received for our customer's money?

Italian Bees

of the same **SUPERIOR STOCK** in Packages, Nuclei and Full Colonies. We have 2,000 colonies headed with young queens. Can give you good stock at attractive prices. Let us quote you on your needs. Special prices on three-frame nuclei. Special attention to car-load shipments.

THE STOVER APIARIES, MAYHEW, MISS.

A:FEW:SUGGESTIONS:FOR NEW:YEAR'S:RESOLUTIONS

"The plans you make are the factors that govern your success."

WHILE your bees are not at present bringing in any returns, but are consuming honey which is valuable, the winter months may be made the most profitable of the whole year. As you sit in your comfortable room reading bee literature and having visions of the coming season, the plans you make are the factors that govern your success. The mere physical labor of carrying them out is a very simple matter in comparison. Therefore,

RESOLVE to keep bees better and
RESOLVE to keep better bees.
RESOLVE to produce more honey per colony and then
RESOLVE to keep more bees.
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GLEANINGS IN BEE CULTURE

JANUARY, 1922

EDITORIAL

Disinfecting Hives Without Charring the Wood.

A PLAN for disinfecting the hives when treating for American foul brood, used by F. R. Buchanan, an extensive honey producer of Los Angeles County, Calif., enables him to scorch out the hives without danger of charring the wood. He first wets the inner surface of the hives with water, then piles several hive-bodies in a pile, applies gasoline to the inside of the pile and ignites it. By this plan a high degree of heat is applied to the surface of the wood, but the water prevents any charring.

* * *

The Use of Honey as a Cosmetic.

FROM ancient times down to the present various writers have recommended honey as a beautifier either when used as a food or as a cosmetic. Certain manufacturers of cosmetics are now using the word honey in their advertisements and on their labels to conjure with. Now comes Grace Margaret Gould in her "Beauty Talks" in the November issue of the Woman's Home Companion, recommending honey as a cosmetic in glowing terms as follows:

> Honey, to bring the flower-freshness back to your face. Mustn't forget that honey is the product of flowers, and if properly used will give the pink and white freshness of youth to the skin that is old and tired-looking. Tell my Good Looks friends about the honey mask. Following is the recipe: Mix a tablespoonful of strained honey with a tablespoonful of fine white flour. Add a few drops of rose water, just enough to make the honey paste smooth and as liquid as you need it. Spread carefully over the face. Let it stay on half an hour and then wash off with cold water. Try the mask twice a week for a month. Result—youth back in your face.

* * *

A Knock Is a Boost.

IN THE December issue of the Country Gentleman there appears an article by J. Sidney Gates, entitled "Is Hubam a Failure?" While he does not answer this question in the affirmative in so many words, he introduces negative testimony from experiment stations which, naturally enough at this time, are conservative. We could not expect them to give their final conclusions. He apparently tried to find all the fault he could without introducing any testimony favorable to Hubam from sources he might have drawn on.

Moreover, he goes out of his way to ridicule Professor Hughes for the manner in which he introduced the seed of this plant. He does not bring out the point that Professor Hughes did not get a single dollar on the sales of the seed and never has. He gave away the seed in order that all might test it. Notwithstanding there are hundreds if not thousands of persons who have tested Hubam, Mr. Gates makes no allusion to any of these. He apparently ignores the fact that the annual sweet clover will produce a crop in a third of the time of the biennial; that it has been tested for hay, silage, and as a turn-under crop. While the roots do not live over, the seed, if not harvested, will lie on the ground and produce a large volunteer crop the following season.

Had we not seen what Hubam is doing all over the South, North and West we should feel less enthusiastic over it. Apparently Mr. Gates has not seen the immense fields of Hubam in its native state, Alabama; nor large fields of it in Ohio, Michigan, the Dakotas and elsewhere where it is grown. He has never met Professor Hughes, apparently; for if he had he would have known that he is not an exploiter nor one who is in the habit of making statements that he can not substantiate.

It is not to be wondered at that a good thing should have its detractors. They always do. A knock is a boost.

* * *

Winter Protection in Colorado.

At the two short courses recently held in Colorado there were conflicting opinions expressed by different beekeepers present as to the value of winter protection for bees. It has long been considered unprofitable to pack bees for winter in Colorado, as well as other parts of the arid region of the West. This is apparently the opinion of most of the extensive honey producers in Colorado, but a few men reported a remarkable increase in the yield per colony when winter protection is provided. In one case the figures showed that colonies which had been packed well during the winter yielded an average of seven supers of honey per colony, while those left unpacked yielded an average of but one super each. No doubt the difference of opinion among beekeepers of the Intermountain Region as to the value of winter protection is a result of differences of altitude and exposure to winds, but probably the chief reason for the prevalent practice of wintering in single-walled hives lies in the fact that the main honey flow comes so late that even weak colonies have time to build up for it in the spring. Some of those who are packing for winter in Colorado practice dividing these strong colonies in May, which enables them to have two strong colonies ready for the honey flow which usually begins the latter part of June or the first of July. If no increase is wanted the colonies are reunited at the close of the main honey flow, which gives strong colonies for winter and saves considerable fall brood-rearing.

Are Beekeepers Losing Interest in Honey Production?

REPORTS from some of the meetings of beekeepers recently held in different parts of the country indicate a smaller attendance than usual, as well as a lack of interest in some cases. This is to be expected after a few years of abnormally high prices for honey, and no doubt many of those who plunged headlong into honey production when prices were high will drop out when prices are no longer so alluring. Honey production must now pass out of the highly speculative, ''get rich quick'' class and go back among the more conservative industries. Perhaps the sooner this is accomplished, the better.

But many of the older beekeepers are finding it difficult to readjust themselves to the new conditions; and, strange as it may seem, just when beekeepers are most in need of the benefits that should come from their meetings in helping them to reduce their production costs and increase their yields, many are failing to take advantage of the winter meetings. The Editor is convinced that now is the time to push ahead in honey production instead of hanging back. The greatly increased consumption of honey thus far this season, in spite of adverse industrial conditions, certainly looks good for the future. The potential market for honey is no doubt greater than any of us have ever dreamed it could be. Those who stick to honey production now, get away from the wasteful methods in production which, in spite of the waste, yielded a profit when prices were high, and pass by no opportunity to learn something that may help to increase their average yield per colony, are the ones who will have their buckets right side up when more prosperous times come.

The Wintering Problem in Southern California.

THESE editorials are written in southern California where the Editor is assisting in a short course in beekeeping given at Los Angeles by the Extension Division of the University of California and the U. S. Department of Agriculture. At this time (Dec. 10) normal colonies of bees of normal strength for this season are broodless and about as quiescent as they ever become in this region except during periods of rainy weather.

Apparently the bees try to take a rest here during the winter as they do in the North, but during the day the hive is warmed up by the bright sunshine and, if the bees have formed a cluster during the night, it is broken during the day. The bees usually fly freely nearly every day except during rainy weather.

Willows are already beginning to put out new growth where they have sufficient water supply, and soon the bees will be gathering pollen from this source. Some varieties of the eucalyptus are now in bloom, and the bees are beginning to obtain nectar from this source. The warm days and cool nights, together with some early pollen and nectar, will soon stimulate in all normal colonies brood-rearing, which is then continued thru the remainder of the winter, tho it is not carried on extensively. Usually brood can be found in some of the colonies of any apiary in parts of southern California every month in the year. Thus while there is a more or less definite broodless period here in the fall or early winter, this period is only a few weeks long instead of a few months as in the North.

One outstanding feature of winter brood-rearing here is that, as a rule, it is the strongest colonies that remain broodless the longest. Weak colonies or colonies made up largely of old bees are the ones that can be expected to rear brood at this time when the strong colonies are broodless. This longer period of no brood-rearing should give to the strong colonies a great advantage.

With so much winter activity the colonies often become badly depleted during the winter, dwindling down to mere nuclei before they begin to gain in the spring. Surprising as it may seem to northern beekeepers, the problem of having the colonies rousing strong at the beginning of the honey flow from orange blossoms is apparently more difficult than that of the northern beekeeper in having his colonies ready for the honey flow from clover. In other words, excessive winter flight, together with winter brood-rearing, is more difficult to overcome than winter activity because of cold weather or poor stores during confinement in the North.

The most important steps in the preparation for winter here, to prevent the depletion of the colonies by excessive winter activity, are to have vigorous young queens in the late summer and leave an abundance of honey—more than enough.

The temptation to take away too much honey is even greater here than in the North, because the beekeeper expects his bees to gather a little during the winter. Those beekeepers who have learned to ''wrap their bees in lots of honey'' for winter, as one man expressed it, are the ones who are securing crops of orange blossom honey; while those who expect their bees to rustle for a living after extracting time and during the winter, as too many still do, count on obtaining but little surplus from orange blossoms, the bees building up on the orange honey flow ready to be moved to the sage which comes on later. Many of the most progressive beekeepers here now winter their colonies in two stories, with the upper story two-thirds full of honey.

* * *

Condensation of Moisture in Hives in Winter.

BEEKEEPERS have long associated wet and mouldy combs with poor wintering. In fact, the condensation of moisture within the hive is often looked upon as the cause of poor wintering, and many methods have been worked out for the removal of moisture from the hive in winter in order to bring about better wintering.

Before the invention of movable-frame hives some beekeepers had learned to turn the box hives upside down in cellar-wintering in order to permit the moisture more readily to escape from the hives. Even today some who winter their bees in the cellar raise the hive cover slightly or remove it entirely and spread a piece of cloth over the hive for winter to keep the interior of the hives dry. In outdoor wintering some provide for the escape of moisture-laden air thru openings in the upper part of the hive or thru a porous covering such as burlap, canvas or pieces of old carpet.

These methods, of course, are effective in removing the moisture; but the same draft of air that carries out the moisture also carries with it the precious heat which the bees, having no other means of warming their hives in winter, are compelled to generate by muscular activity, which, in turn, creates more moisture. In order to prevent much upward draft of air and at the same time keep the hives dry, packing material is usually placed above when upward ventilation is provided for by using burlap or cloth over the frames instead of the regular hive cover.

More or less moisture is being given off by a colony of bees all of the time, the amount given off being directly in proportion to the amount of honey they consume, which, in turn, depends upon the amount of activity of the bees. During the summer when the bees are most active they give off large quantities of water vapor, but in the winter when they are broodless and quiescent they give off but little moisture, tho it is only during cool or cold weather that any of this moisture condenses in the hives. As long as the inner walls of the hive remain warm enough there is, of course, no condensation of moisture within the hives. In this case the moisture passes out the entrance in the form of water vapor. But as soon as the walls of the hive or the combs that are outside the cluster are chilled below the dew point, which varies according to the amount of moisture being given off by the bees, condensation of moisture will take place upon these cold surfaces. If the moisture given off by the bees is decreased, the inner walls of the hive must become colder before condensation takes place; and if the moisture inside the hive is increased, condensation takes place at a higher temperature of the hive walls. When colonies of bees become quite active during the winter because they are using poor stores while confined without a cleansing flight or because the hives are too cold, they give off more moisture than when they are quiet and wintering well. If any colonies begin broodrearing in winter, they will, of course, give off more moisture than if they remain broodless. In such cases there will be wet and mouldy combs if the hive becomes cold enough on the inside to cause condensation. Thus it is the active colonies that become wet ,while the quiet ones may remain dry. To remove the moisture by excessive ventilation in such cases is to remove a symptom while the cause remains.

No doubt wet and mouldy combs are injurious to the colony, but to a large extent at least they should be looked upon as a result of poor wintering instead of the cause. Condensation of moisture within the hives in the cellar usually indicates either that the cellar temperature is too low or that the bees are using poor winter stores, which cause undue activity. In outdoor wintering it is more difficult to keep the walls of the hive warm enough to prevent condensation within the hive during severe weather, but condensation is greatly reduced by providing good winter stores and giving ample winter protection.

In the far North where the inner walls of the hives may get too cold even when well packed, some beekeepers provide for a slight amount of upward ventilation thru the packing at the top, but this is not necessary, except where winters are quite severe, when the hives are well packed. Sealed covers are usually preferable for cellar-wintering, if the stores are good and the temperature of the cellar is kept high enough. Sealed covers can also be used for outdoor wintering if the stores are good and the hives well protected, except in the far North where the packing may not keep the inner hive walls above the dew point.

SOME LOCALITY DIFFERENCES

Importance of Fitting the Management to Conditions Peculiar to the Locality and the Season

By Geo. S. Demuth

THE free interchange of ideas among beekeepers, which has been such an important factor in the development of the industry, revealed, years ago, many differences of opinion among careful observers in different parts of the country. Many of these differences were of course due to differences in the localities where the observations were made; so, early in the history of beekeeping in this country, the influence of locality upon the behavior of the bees, as well as upon the management necessary for best results, was generally recognized. In those days beekeepers in their conventions and thru the bee journals, finding that they could not agree on many important beekeeping questions, usually explained their differences by the differences in the localities.

But beekeepers are not inclined to agree on many questions of management when located in similar regions, and even in the same region. They would not be living up to the traditions of their craft, if they were inclined to agree fully when discussing many of the questions of management that naturally come up whenever two or more real beekeepers meet either in person or thru their literature. In the earlier days many differences of opinion were explained by "locality," which really were the result of faulty observations or personal prejudices. Out of this there has come a growing tendency for beekeepers of one region to reject the experience of beekeepers in other regions as not being applicable to their own, instead of searching out the differences in the environment which brings about the apparent difference in the behavior of the bees in the different regions. This unfortunate tendency, to a certain extent, has hindered development, for it is much easier to blame the "locality" than to search out the real reasons for the differences. For this reason during recent years the term "locality" has been held in ill repute, many writers avoiding its use; and when it is used in conventions to explain away differences of opinion, it often causes considerable merriment.

To avoid the use of this term in our literature may be as great a mistake as its former abuse, which led to its degradation. Those who have been tolerant enough with the other fellow's views to go to the trouble of analyzing the factors in the environment in each case, have learned much about the way honeybees respond to different factors in their environment and the differences in management indicated for the various conditions. But they have also learned that bees can be expected to behave in the same way in every locality, if the total environment could be made the same.

The factors which make up the locality are (1) the various combinations of weather conditions and (2) the honey plants of the region. Almost endless combinations can be made up from these. The differences in management necessary for different localities are largely brought about by the time of the occurrence of the main honey flow in relation to the time of the natural great expansion in brood-rearing activities in the spring. The length of time between the natural occurrence of these two things gives several types of localities.

In the white and alsike clover region of the northeastern portion of the United States and the adjacent portion of Canada, the natural heavy brood-rearing of spring occurs just before the beginning of the main honey flow from clover, so that under good management the colonies are ready for the short honey flow with a great horde of young workers. The citrus-fruit region in southern California is very much like the clover region of the far North, so far as management is concerned, in spite of the great difference in climate, for in each region the main honey flow is short and rapid and occurs at about the time the colonies have reached their peak in spring brood-rearing.

In the midst of the buckwheat region of southern New York and northern Pennsylvania where there is but little if any clover, the bees plunge ahead with their brood-rearing in May (provided they have wintered well and have plenty of food) as tho they were getting ready for the honey flow from clover in June, altho here the main honey flow does not come in June but comes in August. The splendid force of workers reared in May, which become the harvest hands in the clover region, are of but little if any value for the honey flow from buckwheat. In fact, many of them may already have died of old age before buckwheat begins to bloom; and, if still alive, they are too old to help much in gathering a crop of buckwheat honey.

The problem of building up for the honey flow in the buckwheat region is therefore quite different from that of the clover region. The same thing is true, to a less degree, in the irrigated regions of the West where alfalfa is the chief source of nectar. In some portions of this region the bees build up early, if well managed, just as they do in the clover region and the citrus region; but the main honey flow does not come until a month or six weeks later, at which time the colonies may not be in as good condition to gather a large amount of surplus honey as they were earlier. Here again the beekeeper is confronted with the serious problem of keeping up sufficient brood-rearing to hold his colonies strong until the beginning of the main honey flow, the problem being similar to that of the buckwheat region.

In some localities in the South the bees regularly build up to great strength early in the spring where there is no honey flow yielding surplus honey until six weeks or two months after the bees are ready for it. If left alone during this interval, these colonies, which were strong too early for the honey flow, may become almost worthless by the time the main honey flow finally arrives.

In other localities in the South there may be several honey flows of major importance during the season, with a period of dearth of nectar between. If the first of such a series of honey flows occurs just after the heavy brood-rearing period of spring, the bees, if well managed, should be strong enough to gather a crop of surplus honey during this honey flow; but they often fail to maintain their strength to a sufficient degree for the next honey flow, especially if Italians, and the first honey flow tapers off at its close.

Why Beekeepers Disagree as to Best Management.

Thus while the beekeeper, in a locality where the main honey flow comes early, emphasizes the importance of good wintering and conditions favorable for rapid building up to great strength in the spring, beekeepers in the alfalfa region and in the buckwheat region are not so much concerned about better wintering or better care in the spring, for they have a longer time for the colonies to build up before the main honey flow. Therefore the beekeepers in these two types of regions agree to disagree as to the value of winter protection and spring protection for their colonies.

The alert beekeeper in the buckwheat region or the alfalfa region may discover that by better wintering and better spring management he is able to divide his colonies before they have had a chance to reach the peak of brood-rearing in the spring, thus making two colonies which build up in time for his main honey flow, each of the two colonies, at the beginning of the main honey flow, being as strong as, if not stronger than the single original colony would have been if left undivided. When such a beekeeper writes up his discovery for a bee journal or describes his management at a beekeepers' convention a loud protest is due from the beekeeper from the clover region or the citrus-fruit region, who finds it hard enough to get his colonies up to full strength in time for his main honey flow. He may advise uniting colonies previous to the main honey flow, and he usually insists that making increase previous to the honey flow is fundamentally wrong and should not be done if surplus honey is wanted.

The beekeeper in the South who finds his colonies booming strong two months before the main honey flow, may discover that he can sell package bees from his colonies early in the spring and by doing so actually bring his colonies to the honey flow two months later, in better condition than if the package bees had not been taken away, for they then come up to the honey flow still on the upgrade instead of on the decline. When he announces his discovery, experienced beekeepers in localities of the clover and citrus-fruit type are ready to register a protest against such a procedure, and beginners in the latter type of location may take the advice home and ruin some of their colonies by trying it in a location where it can not be done and secure surplus honey at the same time.

The beekeeper in a locality having a series of honey flows of major importance, with intervals of dearth between, may discover that Caucasian bees rear brood thru the period of dearth better than Italians. If so, he may be expected to recommend this race as being far superior to Italians, while beekeepers in other regions prefer Italians.

Influence of Locality Upon Swarming.

Some years ago a beekeeper in Texas startled northern beekeepers by announcing that in his locality swarming may always be expected to cease suddenly and completely when the main honey flow begins. Immediately beekeepers in other regions protested, insisting that such a procedure on the part of the bees is quite unnatural, and pointing out that in their localities the swarming season may be expected to begin when the main honey flow begins. Thus beekeepers in the northern portion of the clover region know positively that it is bee nature to prepare to swarm during the honey flow from clover, while in some southern locations the beekeepers are just as certain that it is natural for the bees to give up swarming when the main honey flow begins in earnest. They can only agree to disagree, each perhaps doubting the correctness of the other's observations, or blaming the difference upon "locality" by which the very nature of the honeybee is apparently changed.

But by looking deeper the explanation is not to be found in a change in the instincts of the bees as to swarming, but in the greater length of time between the extensive brood-rearing of spring and the beginning of the honey flow in some southern localities than in the northern localities. The greater proportion of field bees in the southern locality results in the brood-chamber being nearly depleted of its workers during the heat of the day when the honey flow begins, because they go to the fields; while in the far

North, where the honey flow usually comes when the bees have the most brood, the brood-chambers are crowded with young and emerging bees when the honey flow begins.

Character of Honey Flow Determines Number of Supers Needed.

The honey flow in one location may be short and rapid, as in the clover region and the citrus-fruit region, while in another it may be long and slow, thus making a great difference in the number of supers needed to harvest the crop and have the honey well ripened. In dry climates where the honey flow is long and slow, many beekeepers insist that one extracting super is enough for each colony, since they can extract several times during the honey flow and at the same time have the honey well ripened; while the beekeeper in a moist climate, having a short and rapid honey flow, insists that it is necessary to have enough supers to hold the entire crop, and advises extracting some time after the close of the honey flow. In each case the other fellow is always wrong.

Examples of this kind could be multiplied almost indefinitely, because the number of possible combinations of weather conditions and honey flows is almost without limit. It is important that beekeepers in any particular type of locality learn the reasons for the other fellow's management, instead of condemning it without study because in their own locality the variation from season to season varies their problems, sometimes making the methods that have been worked out in an entirely different locality the best to use in their own locality on account of some peculiarity of the season. In other words, he who fails to recognize and study the problem of locality and adjust his management to fit changed conditions, will not be able to secure the best results possible in his locality every season. Would it not be well for us to polish away the smirch from the old term ''locality'' and give it another trial as a beekeeping term?

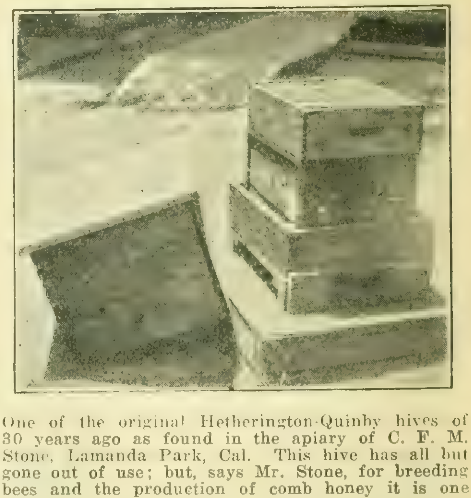
HETHERINGTON - QUINBY HIVE

Some Reminiscences of the Good Old Days When Modern Beekeeping Was in the Making

By E. R. Root

I ALWAYS feel sorry for the poor fool who can tolerate closed-end frames with their bee glue and bee-smashing.'' I presume I have heard that remark hundreds of times. It is seldom, however, that the user of such frames is sorry for himself, and he would resent the insinuation that he belongs to the class commonly called ''fools.'' I must confess that I myself, away back in the 90's, shared somewhat the feeling voiced above, until a certain bicycle trip caused me to modify my views somewhat—not because I advocated the closed-end frames, but because I saw that such frames could be handled, and were handled, by some of the most extensive beekeepers in the world. In the early days of California beekeeping J. S. Harbison could not have been persuaded to handle anything else than his own particular type of closed-end frame. The late Captain J. E. Hetherington at one time had 3,000 colonies on Quinby closed-end frames; and today, if I am not very much mistaken, P. H. Elwood has over 1,000 colonies on such frames.

I began editorial work on this journal in 1885. I read various discussions concerning the various merits of closed-end and open-end unspaced Langstroth frames. Knowing that some of the largest beekeepers in New York were users of the Quinby closed-end frame as modified by Hetherington, I had a great desire to see and know for myself. The result was that in August, 1890, I made a trip across the State of New York on one of the first safety bicycles that was ever made. At that time a man traveling on a ''safety'' was more of a novelty than a man in an airplane going overhead today—so much so, in fact, that the people in the country towns flocked out in great crowds to see that man skip-



One of the original Hetherington-Quinby hives of 30 years ago as found in the apiary of C. F. M. Stone, Lamanda Park, Cal. This hive has all but gone out of use; but, says Mr. Stone, for breeding bees and the production of comb honey it is one of the best ever devised. Altho the frames are closed-end it is not a bee-smasher; and those who are still using it in New York swear by it.

ping thru the country on a pair of wagon wheels. Even the dogs paid their respects by grabbing at my ankles.

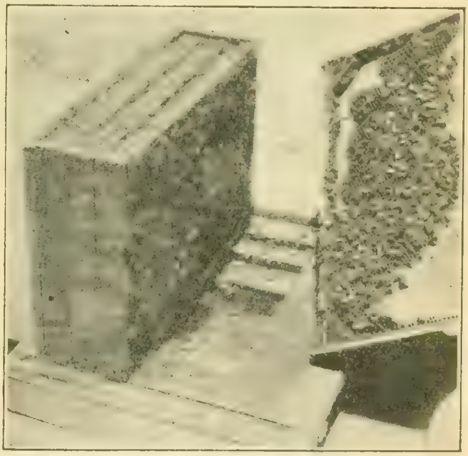
On this same bicycle trip I discovered the Hoffman frame—that is, a sort of cross between the old-style Langstroth and the closed-end Quinby. That frame as now modified by me has lived to become almost universal. This apparent egotism on my part may be softened by the remark that there are some who think it the worst frame ever devised. I found also on that trip the closed-end Quinby frame and hive. I ran across these at the home of P. H. Elwood, then of Starkville, up among the hills of Herkimer County. I spent several days with him, and at the conclusion of my visit I became convinced that these frames could not only be handled rapidly, but that, too, without the nuisance of bee glue or of bee-smashing. In fact, I saw Mr. Elwood actually go thru dozens of his hives rapidly without smashing a bee—simple as could be if one only knew how. At the time, in a series of articles in this journal I described the Hetherington-Quinby hive. Of course it will be understood that Captain J. E. Hetherington, who then had about 3,000 of them, had slightly modified the original Quinby hive and frame so that it was more workable for the commercial beekeeper.

It should be understood that the Quinby frame proper is not a hanging frame, but a standing frame, resting upon the bottom-board, upon one end of which is fastened a piece of strap iron about ⅛ inch above the floor. Every Quinby frame had at one corner a piece of strap iron hook which engaged the aforesaid piece of strap iron. The purpose of this arrangement was to keep the frames in alignment and to secure them in an upright position upon the bottom-board. Eight or ten of these frames were hooked on to the bottom-board as shown by the illustration, when two wooden panels covered the two exposed sides. A common string was looped around and tied. On top of the whole were placed supers for box honey, for this was primarily a comb-honey hive. Mr. Quinby and Mr. Hetherington were firm believers in warm hives. They therefore had an outer case and a rim that telescoped over the whole. When a second super was put on, another rim was put in place, and an ordinary "cap" telescoped over the whole. This arrangement made a double-walled hive, very warm, and exactly suited for the production of comb honey. The inner wall consisted of closed-end bars, the two side panels, the outer wall of the rim, and cap before mentioned.

The important feature of this hive was the construction of the entrance. The bottom had a large opening which could be contracted during cold weather. This opening connected with a sort of sub-floor so that the bees would enter the hive by going under it—at least, that was the general design used by Mr. Elwood. Others had an opening in the sides which allowed the bees to pass on this sub-floor up thru the hole in the bottom-board of the hive proper.

There are not many, comparatively, who are using closed-end frames in New York; and I am told the main reason is because the Hetherington-Quinby closed-end frame hive is not a regular equipment, and can not be purchased at any beehive factory.

Two years ago while I was visiting C. F. M. Stone of Lamanda Park, Cal., near Pasadena, he showed me one of those old hives that he secured from O. J. Hetherington, a brother of J. E. Hetherington, who, as I said, had at one time some 3,000 colonies on these same closed-end frames, being at that time the largest beekeeper in the world. I considered this old Hetherington-Quinby hive as a real souvenir and a curiosity. And yet it was something more than a curiosity, because the colonies in this hive were always strong and prosperous. He attributed this to the fact that the frames are closed-end, and that the hive is double-walled—a combination that is also rare in California. I said to Mr. Stone, "I wish you would open up this hive and let me show thru the camera its construction and just how you handle it."



Quinby closed-end frame. This shows how the brood-nest can be split up or dissected for examination.

He had been told by O. J. Hetherington how to manipulate it, and his mode of procedure was precisely that of P. H. Elwood, and presumably that of the renowned and brilliant Captain Hetherington himself. First, Mr. Stone, as shown by Fig. 1, lifted the cap that covered the hive proper. After lifting the lower frame that surrounds the bottom of the hive and the super he proceeded to loosen the string that held the panels around the closed-end frames. He then showed, exactly as Elwood had done nearly 30 years before, how these frames could be separated by means of a common penknife, and how they could be slipped back in place without killing a single bee. This was done by slipping the frames endwise. In fact, that was the only way they could be disengaged, on account of the hooks and piece of strap iron before mentioned. This endwise movement brushes off any bees that may be in the way, and a lot of them become snugly and squarely in place.

The top-bars of the frames drop down a bee-space where the bottom-bars are raised up the same distance. The objection might arise, when this kind of hive is tiered up, that there would be a double bee-space. This is overcome by the use of a rim or frame that is fitted in between the two stories.

I asked Mr. Stone what he thought of that hive.

"Mighty good hive to winter and spring bees in. They nearly always have the best colonies."

"Why do you not adopt these exclusively, then?"

"First, because I can not buy them anywhere; second, because they are odd-sized; third, they are not well adapted to the production of extracted honey; fourth, they are hardly suitable for out-apiaries where much moving is practiced. But," he continued, "I do believe in the principle of closed-end frames because they are warm; and I do believe in the principle of a double-walled hive, and I believe in the size and shape of the frame for breeding purposes; but it is not a frame for extracting."

I guess he is right. This last of Mr. Stone's reasons explains to you why this wonderful Hetherington-Quinby hive did not become popular. I should imagine it would be a wonderful hive for the Southland to supply the pound-package trade.

BEEKEEPING IN FOREIGN LANDS

Honey Industry New but Flourishing in Guatemala Where Good Crops are Assured Every Year

By George Riedel

When I came to this country four years ago it was impossible to find any one who would even consider the honeybee as worthy of consideration from a business standpoint. There had been some interest created here by a beeman from Chile who had given instruction in beekeeping to some classes, but those who installed small apiaries from the information so gathered had finally let them peter out. The only other activity in this line consisted of apiaries on some of the larger coffee plantations owned by Germans. The object of their operators seemed to be centered on economy and the installations were of the worst. In the majority of cases not even extractors were used.

What a change has occurred in the short space of four years, one can imagine from the statement of the American consul to Mr. Tollafield, that in his opinion the honey industry would be the third business of this country within the next five years.

Coming here without capital I began to form partnerships with different plantation owners. The first big modern apiary was formed in combination with Don Arturo Castillo in the plantation "Agua Tibia," and consists of 500 colonies. This was at an altitude of over 5,000 feet, and seemed to me to be too cold during the honey season, which is from October to April. The next year I began establishing apiaries in

A typical Guatemala apiary. Note the bell suspended from a tree (the arrow pointing to it) that is found in almost all apiaries in Central America. The bell is only rung when a swarm takes flight to cause it to cluster (perhaps).

the so-called coffee zone, which has an altitude of from 3,000 to 4,000 feet. The climate is ideal for bees, and the flora is hard to beat. In this zone, which is in the department of Santa Rosa, can now be found about 16 fine modern apiaries of 500 colonies, 11 of which were formed by me, and a great many others are being started on a smaller scale.

The Seasons and the Honey Plants.

In this country there are two distinct seasons, called winter and summer by the inhabitants, but in reality they should be called the dry and the wet. The dry season begins about October 20, and that is the time when the beeman must rustle, because the bees begin at once to bring in about five pounds of honey daily, and by the 12th of November a good colony is bringing in from ten to fifteen pounds a day. I kept a hive on scales for two seasons and found the results the same for both years. In fact the one feature of the country that cannot be paralleled in any other part of the world is the invariability of the seasons. There is never a drought nor failure. Between the 20th of October and the first of November one can absolutely count on the honey flow to begin. It increases until about November 25, and then gradually slackens until Christmas when it ends; that is to say, the flow from the annual plants ends. About February first another honey flow begins from the biennials and this continues, but not so heavily as the other, until about April 15.

Beekeepers in Guatemala place their hives on elevated stands to avoid loss from ants and sudden deluges of tropical rains.

I should say that about 70% of the honey comes from a plant called "Chinchiquasti." It is a true sage, very much like the California purple sage, having a blossom practically the same. The honey is, in my opinion, fully equal to the California white sage honey. It is quite dense and crystallizes in about a month. The flavor is mild and agreeable and does not pall on the taste. In color it is a light amber. The second honey flow comes chiefly from a shrub called "Suykani." When this is in flower it perfumes the whole countryside with the most delightful odor, and when I came here it was the general opinion that this was the chief source of honey. There are other trees almost equally good, among which are the Ahuacati, Mango, Zapotillo, Hoja de queso, Bareto, and others; but I should say that all of these combined do not give one-half of that given by the aforementioned sage called "Chinchiquasti."

Increases 400% and Secures Good Honey Crop.

In May when the rainy season begins, the bees, after having been lying dormant and trying to rob for about a month, again start to thrive. A light honey flow begins, just enough to keep them going; but a great quantity of pollen is brought in so that by June the hives are simply bubbling over with young bees. This is the season that I used for increasing. To give an idea what can be done, I might mention that in July, 1918, in the plantation La Vega, owned by Don Jorge Morales, I increased from 90 to 350 in the months of July, August and September, and obtained an average yield of 165 pounds to the hive from the 350 so made. If one counted, by the so-called spring count method, it would have made an average yield of over 600 pounds to the hive, which I dare say would almost have been a record. Last year, in one of my own apiaries, Los Verdes, I increased from 90 to 600 during the rainy season, but did not get as large a yield, as I had divided a little too much. However, one can count on increasing four times and get a good honey crop too, but one must be on the job every minute because, just before the season starts, we have a month of heavy rain, and if the bees are not fed artificially they will be so weak that they will not be in condition until the best part of the flow has passed.

Some Unattractive Features.

From the foregoing it might be inferred that this is a good country for the honey business—and it is. However, I don't want to paint too rosy a picture. I myself have sold out all my interest in this line, and am now developing an enormous cattle and mahogany plantation. I might also mention that three other men who have come down here with the idea of staying have given it up. Now why? Not because it is not a good bee country; but simply because the conditions in some cases are too difficult to surmount to recompense for the gain. These countries are extremely attractive in many ways and offer many chances for an ambitious man; but before anyone decides to settle here for good he should make a trial; especially if he has a family he should consider the many handicaps. Bad roads, practically no foreigners, a strange language and peculiarities of climate that we are not used to make the life here too difficult for most American families. It is different when one is the owner of a great plantation. In that case he may live like a prince; but, all in all, I would not advise Americans to come here to start in this business. It is true that as a strictly bee proposition I believe there is no place in the United States its equal. No bee diseases, cheap and good labor, ideal climate, a sure crop every season with big results; but when one considers the difficulties of marketing, the reduced price and the fact that one is spending the best years of his life in a strange country, I for one would rather make smaller profits and live in my own country.

Castor oil trees or cheaply constructed sheds are frequently used in this land of hot sunshine to supply shade for the hives.

However, in the case of some young men with ambition who know the business, this is not a bad field, and beginning with this they may pass into other opportunities of which there are many. I myself want to see more Americans enter these countries and develop them and bring them under the influences of American ways of doing things. I should like to see this business develop and be controlled by Americans, since we have been the ones to start it. I truly think this is the best way to conquer these countries, industrially and commercially, for once we have made ourselves felt in that direction it will not be necessary to resort to the crude methods of military strategy.

Guatemala, Cen. America.

[Beekeepers are quite like all mortals and have the usual traits of mankind, one of the most outstanding being that the average beekeeper believes that the other fellow's meadow is the better one. Our foreign mail continually brings to us letters from one country asking for information regarding another. A New Zealander will write desiring to locate in the United States, one from Australia regarding locating in the Argentine, etc.

Beekeeping in Guatemala is of the mushroom variety. Four or five years ago there was no one in the republic keeping bees under modern conditions, or producing honey as a commercial proposition but today there are possibly 50,000 colonies or more in modern equipment. A young American who had been interested in beekeeping in California arrived on the Pacific Coast of Guatemala possibly four years ago with the idea of becoming interested in beekeeping; his capital being very limited indeed prevented him from venturing on any large scale, and the only thing he could do was to make an attempt to interest some of the large progressive owners of coffee plantations or "fincas." Finally a few of the large "finca" owners were induced to put in a few colonies of bees, and the interest in beekeeping and honey production is so strong today that the American Consul at one of the ports of entry stated that if this activity continued to grow in the future as it had grown in the last three years, honey would be in a very few years the third or fourth export of the Republic.—Editor.]

FROM THE FIELD OF EXPERIENCE

HONEY BY PARCEL POST

A Simple Method of Packing for the Mails. How to Find the Customers

I sincerely believe that, if pure honey in attractive shape could be brought to the attention of every prospective purchaser, there would never be a supply beyond the demand, and the price would be relatively higher.

I am not an extensive producer and my yearly crop runs from 1,000 to 3,000 pounds, sometimes 3,500. But I believe that I could dispose of quite a large quantity at a big advance over what it would bring me if sold wholesale.

Some years ago I had printed a lot of circulars six by nine inches. In this circular I inform the prospective customer that I am offering pure honey direct to the consumer, and explain just what extracted honey is and how it is produced. At the time I had my price list printed on the reverse side of the sheet.

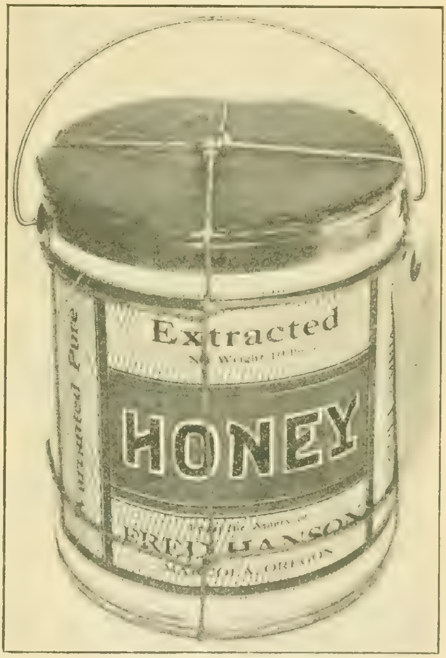
That was before or about the beginning of the war, and when all commodities went up in price my list was much too low. I now regulate my prices to conform somewhat to the general wholesale price of honey and change them as the price goes up or down. I make the price just about double the wholesale price, and the purchaser pays for the container and the postage.

I sell mostly in five and ten pound friction-top pails and have orders for many more of the ten-pound than of the five-pound pails. I prepare it for parcel post shipment in the following manner: I cut a disk out of the strawboard corrugated material so much used at this time for boxes. This can be picked up at your nearest grocery store. The disk is of the same size as the top of the pail. After driving down the cover securely this paper disk is laid on top. A strong cord is wrapped around the pail from top to bottom and crossed on top, then taken again around the pail and tied securely. This gives a cord in four places dividing the circumference into four parts. This cord holds the paper disk securely down on the cover. I then cut two cords long enough to go around the pail and leave enough ends to tie. One cord is placed an inch or so from the top, and the other the same distance from the bottom. As I go around the pail with these cords they are taken under and over the upright cords—that is a turn is taken on each of the upright cords. I do not now recall a single instance of honey shipped in this way arriving at destination in bad order, while it is not uncommon to have complaints of broken and leaky packages when sent by express or freight.

I write the name and address on the paper disk, and also attach a tag bearing the same and my own address. The ten-pound pail, when prepared for mailing, weighs under 11 pounds and will go to the second zone for 15 cents. The 5-pound pail will come under six pounds, and 10 cents will carry it within the second zone. I have what I consider a very attractive blue label that reads:

"Pure Honey, Blue Label Brand, from the Star Apiary, Rhineland, Mo. S. E. Miller, Prop."

In addition I have had printed small white labels with a red margin. These are one and one-fourth by two and one-fourth inches. I have two kinds; one of which reads, "Gathered from autumn flowers," and the other "From white clover." One of these (according to the kind of honey contained in the pail) is posted just underneath the larger blue label.



This picture shows how Mr. Miller prepares his five and ten pound pails of honey for shipment by parcel post.

I could not find in the catalogs a label that suited me exactly in giving directions just how to care for honey; so I got one up according to my own ideas. It tells why and under what conditions honey will granulate and gives the different ways of liquefying it without spoiling the flavor. Many people think that granulated honey is spoiled for use and do not know what to do with it. It is well to advise them with each container how to care for honey. One of these labels is placed on the reverse side of each pail.

Where do I find my customers? Well, I have some old-timers that have purchased honey from me for over 25 years. Then I write to the publisher of a newspaper in some small or moderate-sized city and propose that I send him a ten-pound pail of honey and take it out in advertising. Nearly all editors will accept this offer, and when they get the honey they are so well pleased with it that they will give me a pretty liberal amount of space. One in particular in our state capital usually runs a two-column ad of about three-inch space and carries it for three or four issues. I think he has got to where he expects his ten-pound pail of honey each autumn, and the results are very satisfactory to me.

The clerks in the postoffice and also some of the state officials got a taste of my honey, and they seem to pass the good word along. In some way a merchant found that my honey was having quite a run there and I have received liberal orders from him in five and six case lots of the five-pound lots.

I send out my circulars to parties that I know, and also have a list from the postmaster in St. Louis, giving the names and addresses of parties that purchase direct from the producer by parcel post. One customer that is well pleased will, as a rule, get one or two more.

Advertising in the daily or Sunday papers of the large cities I have not found satisfactory. The small amount of space they allow for a considerable sum makes advertising with them too expensive.

Sometimes when my crop is larger than usual I sell some of it to a manufacturer of high-grade candies in St. Louis, and usually get about one-third more than it would bring if shipped to a commission firm.

I make it a rule to sell only first-class honey to my retail customers. If I have an off grade honey, such as honeydew, I sell it at an off grade price to some manufacturer or a commission house. S. E. Miller.

Rhineland, Mo.

FIVE QUEENS IN A HIVE

How They Were Induced to Live Peacefully Together in the Same Brood Chamber

I was surprised at such an old practical beekeeper as A. C. Miller (page 566, Gleanings) departing so far from nature in his wintering experiment. But as he asks some quite difficult questions as to his queens, I will relate an experiment of my own, practiced in the year 1906. At about that time Gleanings was publishing a series of articles as to E. W. Alexander's management of bees. Among them were mentioned the benefits of dual queens and methods of introducing. I failed in practically introducing laying queens dually in a swarm by following Mr. Alexander's directions. I took six virgin queens and placed them in a full-sized colony isolated some distance from the yard, and after first preparing the colony to receive them I clipped the stings off the queens and liberated them in the swarm. The result was a great disturbance in the hive as shown by the demonstrations at the entrance. After a couple of days I made an examination and found all of the queens' wings cut off close to the thorax. I killed them and placed six more in the colony after clipping the stings and the horny part of one mandible.

Five out of the six were mated and laid regularly; but instead of expanding their brood-nest they all laid in the regular-sized brood-nest, and the cells had five eggs in them, which were gradually removed by the bees until only one was left. Sometimes, however, there were two or three left until they hatched into larval form.

When the flow of honey stops it is bee nature to practice strict economy in preparing for winter, as witness the killing of drones in the fall, and this is just what happened to my extra queens. The bees killed all but one, and therefore I think it will be a difficult job for Mr. Miller to winter over dual queens. H. S. Philbrook.

Newbury Park, California.

CAGED QUEENS LOSE FERTILITY

After Eighteen Days in Mailing Cages Two Queens Become Drone-Layers

In treating two advanced cases of European foul brood in July I kept the queens in mailing cages for 18 days. They were Italians of fine strain, reared this season and very prolific. But upon releasing them they were drone-layers—one entirely so—the other laying about three-fourths drone eggs. I held them some time to see if they would become normal, but there was no improvement. They were as beautiful and active as before being caged and seemed about as prolific, but they laid abnormally to a considerable extent, there being in many cells two, three and four eggs, and some of them were deposited on the side walls. This was not due to lack of strength of colony. Had I used a push-in-the-comb cage, I believe the result would have been otherwise.

When doing some requeening I brought some of the old queens home with me, and then decided to see how the "royal battle" is pulled off. So I put two in the same cage (there being three or four workers present). They made two or three attempts at battle, which seemed to me mild ones. I placed the queens away for the night, and next morning both queens were all right and apparently the best of friends.

European foul brood is very prevalent in this section and most "backlotters" have bad cases of "cold feet." In short, the situation, as I see it, is that bees can no longer be successfully kept here except by the man who is willing to make diligent application and learn the game thoroly all the way thru, and then allow no loose practices.

Raymond, Wash. M. C. Osborne.

SAVES A LOT OF LIFTING

How Cable and Tackle are Used Above Long Rows of Hives

Mr. Swahn has his colonies arranged in three long rows capable of holding about 50 colonies to the row. At the end of each row he has had erected a telephone pole, with a cable running the full length of the row. He has constructed a carrier to run along this cable, the release of which is controlled by a rope fastened at the top. By merely jerking and slightly twisting the rope he can tighten it so that the carrier when lifted into the air will remain stationary. The carrier is made something like a set of ice tongs, with the lower part of sufficient length to lift three or four hive-bodies.

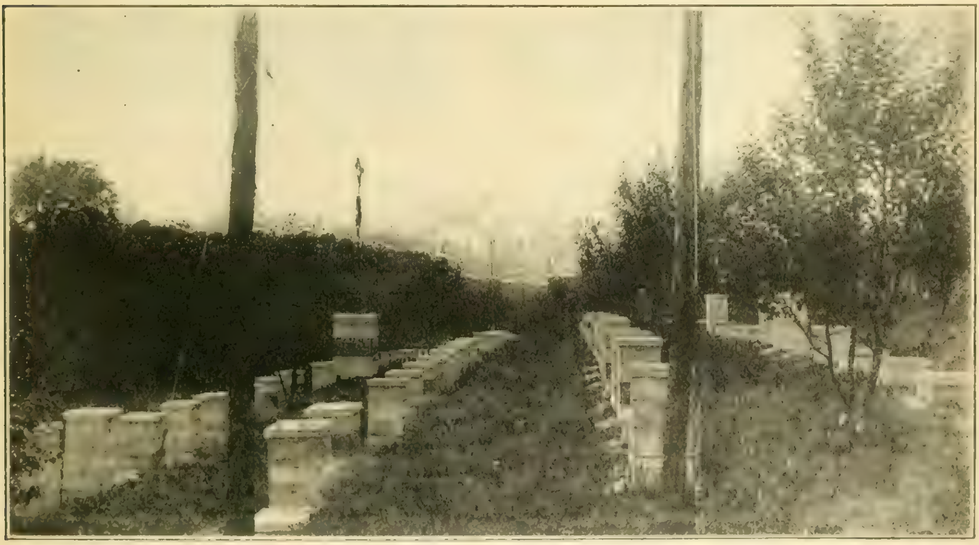
The big value of this piece of machinery is in that he is able to lift all the supers at one time, and leave them suspended in the air while he goes thru the brood-chamber. When he desires to put them back, all that he has to do is to give the rope a pull and lower the supers back upon the brood-chamber. The carrier rides the cable so that he can very easily shift it from one part of the yard to another, and it can be detached from one cable and placed on another in a very few minutes. Because of the length of the cable it necessarily sags to a more or less extent in the middle, but this is taken care of by an adjustable prop which can be placed at any position along the cable where he desires it. H. F. Wilson.

Madison, Wis.

IT BOOSTS THE SALES

Inexpensive Local Advertising Works Wonders in Selling Honey

We need only to step into any grocery store to see many instances of how advertising is controlling not only the demand, but also the price of many articles of everyday use. While some large concerns are spending large sums of money and are accomplishing a great deal toward increasing the demand for honey, I believe that beekeepers everywhere will find themselves well



Mr. Swahn's apiary arranged for lifting supers by tackle and leaving them suspended in the air while the brood-chambers are being examined.

FROM THE FIELD OF EXPERIENCE

repaid for any effort they put forth in local advertising. It will be found that the advertising cost will eventually be paid by the consumer, because of the increased demand and higher price for the honey which is advertised. The following are a few of the methods which have proved successful for me, which I hope may be of value to others.

A grocer has so many articles to display and sell that he can not give much attention to any one article, unless aided by persons interested in that particular product. Neat display signs, calling attention to honey and its uses, should be furnished to the grocer. These signs, as well as other advertising matter, may be obtained from the supply dealers at a very nominal cost or may be produced locally. Small slips to be placed by the grocer in out-going orders, calling the attention of the customer to the fact that the grocer has on hand a supply of honey from your apiary, together with a few suggestions for its use, may prove of value.

One of the best and cheapest advertising mediums is the display window. A short time spent in aiding the grocer to fix an attractive honey window display will bring in a large increase of orders. The window to be decorated should, as a rule, be covered with cloth or paper of a suitable color to harmonize with the labels or other decorations. Crepe paper is good for this purpose and may be purchased in a variety of colors at any drug store. Decorations prepared for some holiday may be used. Artificial flowers placed among the jars and cans produce a pleasing effect. Honey in the comb and in a variety of glass and tin containers should then be placed in the window in neat order. A pyramid of honey in glass jars, with an electric light placed behind it, will attract much attention in the evening. A very attractive window sign may be made by taking five clear glass quart jars of honey, and on each jar pasting a letter cut from paper, so that the word ''honey'' is spelled out. A small box containing an electric light, with flasher attachment, is then placed behind these jars, and a small blinking electric sign is the result.

Since prohibition the use of sweets in all forms has been greatly increased. We furnish local soda fountains with neat display cards calling the attention of patrons to sodas, sundaes and malted milk drinks made with honey. Thick honey should be slightly diluted with water for fountain use, and is then used the same as any other fountain syrup. In my estimation there is not a better or more delicately flavored drink on the market than honey malted milk. Restaurants are also good places in which to place display cards because people have ample time to read them. Wordings such as ''For Delicious Sweetness, Order Honey, or ''Order Honey, the Sweetheart of the Flowers,'' are good.

An advertising slide, run occasionally in a local picture theater, brings results. When cantaloupes were first on the market this season, we ran a slide suggesting the use of honey with cantaloupe. A number of people tried it and later remarked how good it was. A slide should not contain too much reading matter—about 15 words are plenty.

About once a year we make it a point to donate honey for some public dinner. Ten pounds will serve a large number of people, and many of them will later purchase a supply from their grocer.

When our local high school starts the fall term the domestic science class is presented with a pail of honey, with instructions to ask for more when needed. The teachers are usually glad to recommend its use.

A road-side honey display case used by Mr. Allen of Big Timber, Mont.

For those who live along a public highway the tourist business is quite profitable, as well as being good advertising. C. W. Allen of Big Timber, Mont., has a very unique road display sign, the novelty of which attracts a large per cent of the passers-by, who stop, and purchase not only honey but milk, butter and eggs. As seen by the illustration this display case is easy to construct. It has a hinged glass door on each side, which may be locked to protect the contents.

During the last four years the demand for honey has been increased fivefold in this community, due almost entirely to the small amount of diversified advertising which has been done.

Big Timber, Mont. R. A. Bray.

SIFTINGS

J. E. Crane

DOES Pollination Stimulate Growth of Fruit Body?'' is asked on page 773 and answered in the negative by Axel Holst. The cases of seedless oranges, bananas and seedless tomatoes are given as examples, and so far he is quite right. But Nature is many-sided, and what is true of one plant may not be of another. A leaf of the Rex begonia, laid on a damp soil with a suitable temperature, will proceed to take root and form new plants, but it by no means follows that the leaves of other plants will do the same. In my back yard is an apple tree that produces many one-sided apples, i. e., one side fully developed while the other side is dwarfed or imperfectly developed; also some small ones one-half or one-fourth size. If we cut into these one-sided apples, we shall find seed in the well-developed side and no seed in the dwarfed side. The small apples contain no seeds. The same appears to be true of grapes. The seedless grapes or raisins, so far as I have observed, all appear to be dwarfed. This might at first seem to be a characteristic of the variety; but if we take a variety like some of Rodger's hybrids that produce both seeded and seedless grapes in the same cluster, we shall invariably find those having seeds are large and perfectly developed, while those without seed are small and inferior in size.

* * *

B. F. Kindig tells on page 777 that it is lawful in Michigan to give only the minimum net weight of sections in a case of sections. This, I understand, is true of the U. S. law in such matters, but is it desirable to pack our honey in this way—12, 13, 15 or 16 ounce sections all in the same case? I noticed in visiting several packing houses in Florida some years ago, that oranges were carefully sorted, one size going into one box and another size into another. So we find in the retail stores the oranges are sold according to their size, the large ones for one price and the smaller ones for less. Why should not the same be true of section honey? Why should the retail grocer charge as much for a 12-ounce section as a 15-ounce section, as he naturally would if all were labeled ''minimum net weight, 12 ounces?''

* * *

After a busy day it is very enjoyable to take Gleanings in Bee Culture and sit by a warm fire and read of beekeeping in the ''North, East, West and South,'' the pleasures, anxieties and disappointments of beekeepers in every direction, and feel that, after all, we have fared as well as the average or better than most of them. How freely have the flowers been distributed over our broad land! As one nectar-producing plant disappears, another comes in to supply the bees and repay for their care. Surely the future is bright for the success of our industry.

* * *

''The Silver Lining Grows Brighter,'' says the Editor on page 742. Well, I believe prices are not nearly so bad as they seem. We have had low prices before and lived thru it. I remember buying, years ago, the finest white sage honey in Boston for six cents a pound. Let us all rejoice that the price is low enough so that the poor, as well as the rich, may enjoy honey with their bread. The low price will lead such as have not used it, to do so, and those that have been using it, to use it more freely.

* * *

The increasing popularity of the large retail tin packages holding from 2½ to 10 pounds is evident from many pages of the December number of Gleanings. This has been our experience this year. I met with the Maine State Beekeepers' Association two weeks ago. The gathering was a joint meeting of beekeepers and fruit-growers. One speaker told how a retail grocer had changed from selling apples by the pound to selling by the bushel, and, as a result, sold several hundred more bushels than formerly.

* * *

Most interesting is that account of a battle between a bumblebee and honeybees, on page 777, causing the death of 25 honeybees before the giant bee was slain. It was as exciting as the story of David and Goliath, only it did not turn out as well. It increases our respect for the honeybees that counted not their lives dear to them when the good of the colony required the sacrifice.

* * *

One Maine beekeeper told me how he sold his crop of honey by canvassing the towns about his home by course, not skipping a single store, and he said he not only sold all his own honey but had to buy several thousand pounds to supply the demand.

* * *

Let us all try to remember the statement by John N. DeMuth, on page 772, of the value of sumac bobs for smoker fuel. If it proves as he says, as doubtless it will, it will be well worth remembering.

* * *

We were glad to notice, on page 753, that the U. S. Department of Agriculture has found that the honeybee is quite as efficient a pollenizer of red clover as the bumblebee,

MOTHER

CONSTANCE ROOT BOYDEN

(Stancy Puerden)

Do you remember the 'plaything drawer' in your mother's kitchen table?'' asked a cousin who had come to be with us during those first hard days when mother's loved form lay in the old home, awaiting the last resting place. Do I remember? It is one of my most precious memories, and it is such a revelation of our mother's character that I am going to tell you a little about it. Sweet and modest as the violet of her native England, mother always kept herself in the background, and only her husband and children know how much of the credit for anything which they have accomplished should go to her.

THE modern compact kitchen with its cabinet, sanitary table, and other conveniences to save steps is very different from my mother's kitchen when I was a little child. The table at which mother stood to do most of her work was of walnut, with drop leaves, and at one end was a wide, shallow drawer, designed for cutlery, cooking spoons, etc. But unselfishness, mother's dominant characteristic, is revealed in the fact that the drawer, within my recollection, never held anything to help mother in her work and save her steps. It held children's playthings. Little, hindering, and mischief-making hands were busy at the drawer much of the time while mother's patient feet carried her many steps to the large pantry after articles which might have been kept near at hand in the drawer.

That drawer reveals something of her life of service. Children's treasures are apt to be kept in the room in which mother spends most of her time. Father and mother were neither of them ever robust, and who knows but that the fact of all mother's children, grandchildren and great-grandchildren surviving her is due to her spending so many hours preparing simple but delicious and nutritious food for her family. In the early years of her married life the struggle to make ends meet made such work a necessity, and in later years she chose to do it because of her innate love of a simple life, a taste which she shared with father.

The old drawer reveals her sweet motherliness and love of all little children. When her own children were grown and had homes of their own she still kept the table drawer much as it had been. Some of my dearest recollections of mother are the visits we had when I took my babies, each one in turn, and sat beside that drawer, the current baby ecstatic over its contents while mother, still quick, active and light on her feet, went on with her work.

Mother was not only a baby lover; she was a baby charmer as well. She could pick up a baby screaming with pain or just baby rage at not having his own way, lay him in a certain position across her knees, pat his back, trot him gently and rhythmically, talk to him and in a minute he would be smiling blissfully at grandma.

The contents of the drawer reveal her understanding of child nature. I think there was scarcely a toy in it. By toy I mean something bought at a toy shop. It was filled with ''treasures,'' queer bits of metal and wood, an old steel puzzle made by father, rubber balls, balls of string, little wooden boxes and a little shallow bowl, carved from black walnut. The last named we were fond of sailing on a ''lake,'' which mother prepared for us by putting a dishpan or tub filled with water on the floor. In cold weather she always warmed the water of the little lake that childish hands might not be chilled. She never forgot the comfort of anyone but herself.

A few days ago when I visited mother's kitchen, opened the drawer and tried to see the contents thru hot tears I thought of another trait which the old drawer reveals. It was her talent for exquisite neatness and order. The drawer was lined with clean paper and its contents, now so few, were in perfect order. The old ''treasures'' were nearly all gone, given away, bit by bit, to coaxing grandchildren. But there was one thing with which mother never would part. Her youngest child, a son, many years ago visited a foundry, pressed his fat little hand into a clay mould and a workman filled the mould with molten metal. That little iron hand is still in the drawer, and the one whose boyish hand made the print is now, at thirty-eight, the father of a long-hoped-for baby boy, whom his grandmother never saw.

IT was not only in babyhood that mother loved and mothered her grandchildren. The memory of her friendship for our two sons, now 22 and 18 years of age respectively, is a rich legacy for them and for us. I imagine their way of running to her and confiding in her reminded her of her own two sons in their boyhood. For years they seldom missed eating Sunday evening lunch with her, when in town, and I never could be quite sure whether she invited them or they just gravitated in that direction.

She was very happy over the school and college work of all her granchildren, for love of education amounted almost to a passion with her, and she was always ready to sacrifice anything that her dear ones might have the college education which she had missed.

But mother did not confine her loving acts of service to her children and their children. She was never so happy as when she could help the needy or lonely, those widowed or fatherless. I doubt if father himself realizes quite how many of his kind acts were done at her prompting.

In Florida she ''mothered'' the neighbors all around her, especially those who came for a season only and were unacquainted in the region. In her last letter, written just two or three days before her death, she was planning to take fruits and vegetables to a neighbor. To her a garden meant an opportunity to distribute its products among her children, friends, helpers and neighbors.

Mother's care for the helpless extended even to animals. Her tender heart would never let her rest until she had made sure that an absent neighbor's chickens had water and food in plenty, stray cats and dogs must be fed, and she was miserable if she thought a horse was being neglected, overworked or abused.

A former pastor, not being able to find a word which expressed mother's thoughtfulness for others, coined the word ''otherliness,'' as being more comprehensive than the word ''motherliness.'' He also spoke of another word which always came into his mind in connection with mother, and that was the beautiful old word ''gentlewoman.''

Just to give you a glimpse of the lively and fun-loving side of mother let me tell a little incident. When mother was nearly seventy-two her youngest granddaughter, about a year old, had a habit of entertaining callers by turning graceful somersaults. It can be done gracefully, you know, if one is young and supple. My sisters and I were laughing about it with mother one day when she unexpectedly said, ''That's easy, I could do it myself,'' and deftly folding her skirts about her ankles she put her head down on the rug, was over without a jar and on her feet again before we realized her intention. And she looked just as cool and dignified as usual.

In reading over what I have written it seems so inadequate. I have not touched on her loyalty to friends, her wisdom as a counselor to husband and children, her ability in every branch of home-making and her indomitable energy which outlasted her strength.

Here is the Scriptural text which best describes her, ''Even as the Son of Man came not to be ministered unto but to minister.''

THE little picture below shows mother and father at a picnic. They would not accompany us to hotel dinners, they would not come to formal dinners or parties in their honor; but they loved simple picnic suppers out in the open, with their loved ones about them.

Just two months before mother's death we celebrated her sixtieth wedding anniversary with a simple family supper. At this time she had ten children (including those her five had married, for mother herself regarded them as her children) ten grandchildren and four great-grandchildren, all alive and well, and the number of grandchildren has been increasel by one since then. Each successive year it has been harder for her to leave all these dear ones and go to her winter home in Florida. This year it was especially hard, as I believe she herself was sure she was not long for this world. But when the car took her away from us the tender, beautiful, mother smile was on her dear face.

Mother had suffered greatly at various times in her life, but when death came it was sudden and painless, while she was at work. It was what she would have chosen except for one thing. Her tender heart could not contemplate leaving father and she therefore had expressed a wish to outlive him that she might make him comfortable to the end. And I know father well enough to be sure he is thanking God that he is bearing the grief instead of mother.

Beekeeping as a Side Line

Grace Allen

I SIMPLY cannot get into my subject this month without being personal first. It is so long since I have been! — so here are .

Greetings.

Happy New Year to you, friends, Gleaners one and all,
Amateurs and veterans, beefolk great and small—
East and west and south and north, forest, field and fen—
Happy New Year to you all, womenfolk and men!
Happy New Year to the kiddies with their starry eyes!
Greetings to the Editors, friendly folk and wise!
Everybody, everywhere, here and overseas,
Happy New Year to you all—and also to your bees!

Frankly, that is a come-back. I greeted you just that way five years ago. But, in one way, I am coming back myself, today. That, at least, is how it feels—as tho I had been away for a whole year in some far-off place of strange formalities, where all the friendly intimacies were forbidden. You may not have missed me, but oh dear!—oh dear everybody!—how I have missed you! Missed, that is, the old sense of chatting merrily with you—you others who love the great good world of the great good God and all the things in it, bees included—chatting merrily about a thousand and one things perhaps, tho chiefly about the one.

Beekeeping is only a sideline with you and me, and we have an almost embarrassing wealth of interests besides that of bees. That is the bond of our fellowship. But life does not hold us to that, and it is hard sometimes to let the printed page so hold us. With the specialists, who must study so sternly and steadily their solemn problems of method and cost of production and the rest, it may be different. Tho deep down in my own heart I fancy, somehow, it may not. Most of them are so delightfully human, too. But anyway, this is not their Department! It expects them to skip it!

You see, we tried an experiment during 1921—had you noticed it? Part of us wasn't really happy about it, but she tried hard, at that. She tried to be very practical—*very*—very direct and definite and detailed and matter-of-fact, howsoever prosy and dry-as-dusty her page might thus become. (Remember the anatomy number?—!!! Yet, after all, the real joke was—it was fun!) But now—well, the rest of us have been most courteous. And I have come back. If, however, you don't like it—you who keep bees for a sideline—if you really do not want one single thing except bees, beekeeping and beekeepers mentioned in this department and that without trimmings or flully-ruffles — no friendly personalities and no glimpses into the great world of action or aspiration or beauty or books—you have only, I suppose, to mention that fact to the Editors. And there will be another change.

One day last year, at about this time, I didn't know whether to laugh or to break my heart. Over and again I had tried to write the January Sideline article in a new mood and manner. I wrote and destroyed, wrote and destroyed; but each effort was more dead and wooden than its predecessor. Till at last, in a sort of blithe despair, I wisely gave up, and did these lines instead—

On Trying to Write as Requested.

My thoughts come dressed in gayest gauze,
  Like baby rainbows tipped with wings.
They leap from flower to star to catch
  The little echoes when life sings.
They kneel or dance impartially
  For thoughts are spirit things.

But one cold dawn I dragged them forth
  And wrapped them round with sober gray.
"Now keep your feet on earth," said I,
  "And walk as proper people say,
Down roads of reason, hedged and straight,
  And-get-some-where-I-pray!

They walked like mummies in old masks!
  All day I grieved because their tread
So hollow rang. I did not know
  That something out of them had fled—
Till spirit things, with rainbow wings,
  Came laughing home to bed!

Do you know Virgil's Georgics? I have been living with them in the spare time of the last few days, till I feel as tho I had been in Mantua. And Virgil, known previously only in the *Arma virumque cano* of schooldays, has sung his way straight into my heart and on to the ends of my fingertips.

By what long paths of wonder do the ancient gifts come down! Seventy years before the birth of Jesus of Nazareth, was Virgil born. Great actors were on the world's stage in those days—even as in these. While the little Virgil played about his father's farm, Pompey was clearing the Mediterranean of pirates, Cicero was thundering his deathless orations against conspiring Catiline, and the great Augustus was born. While he was a schoolboy, Caesar was conquering Gaul. While he was still a young man, Pompey the Great was overcome by Julius Caesar—still greater; four years later Caesar himself was assassinated

"at the base of Pompey's statue,
  Which all the time ran blood . .";

Brutus, defeated in his turn, slew himself at Philippi; and Marc Anthony gave his intoxicated soul into the keeping of Egypt's queen. Before he was forty, Anthony and Cleopatra, overcome in battle, had brought about their own deaths and the fall of Egypt; the Civil Wars were at an end, and the warring Roman Republic had become a peaceful Empire under Augustus, who "found Rome a city of brick and left it a city of marble." And during all these years, the poet Virgil, delicate of health but robust of ambition, had lived quietly in the country with his books and his Muses, writing ever greater and greater poetry.

Thru all these centuries it has lived, both in the original "sensitive Latin" and in many translations into all modern languages. In this country and this century, a new translation has been made by that scholarly lover of Latin poetry, Theodore Chickering Williams, so saturated with Latin that he "wrote it, spoke it, thought in it," loved it and turned it into English of such beauty and, we are told, such scholarly fidelity, that he has made us love it too. The Williams Georgics in the library at Peabody College is the last link in the long chain leading to this page from Virgil at Mantua, with his slaves writing his lines on papyrus—nearly two thousand years ago.

There are four Georgics—strangely serious poems about country life, mingling a gentle song on the beauty of the Italian countryside with "a continuous chant on the worth of work" and an unbelievably interesting, straightforward presentation of practical information and instruction. For Virgil was really a countryman, tho intimately associated with Augustus to whom he was, with cause, deeply devoted. He was intensely patriotic. With earnest conviction amounting to consecration, he wrote these poems as his effort to help strengthen his country and solidify the State of Augustus, by chanting of the dignity of farm life—the honorable foundation of national peace, family virtue and individual content.

The First Georgic treats largely of the cultivation of the soil and the signs of the weather. The Second, which contains, say those who know and dare to say, "the most perfect passage in all Latin poetry," treats of trees, orchards, fruits, wine. The Third takes up flocks and herds. The Fourth is about bees.

In this Fourth Georgic, Virgil writes about many things we write about today—location, windbreaks, shade, water, entrances, swarms, wing-clipping, moth, disease and its treatment, the division of labor, destruction of the drones and devotion to the queen—called "king" in his day. The king error is not the only one. We realize, in a self-satisfied way, how far we have gone since that last century before Christ—tho not so far, perhaps, for the time we have had—when we read some of the queer ideas of beekeepers of that period. The funniest are the "clashing cymbals" at swarming time—tho I understand some folks still clash 'em!—the pebbles for ballast, the treatment of disease and the ideas of reproduction. Then there are other plain errors, just as apparent, tho not so striking.

But I wonder what the progressive readers of Gleanings in A. D. 3821 will say about our own bee books and journals, to say nothing of our verse, when they are nineteen hundred years old!

Here then are a few brief extracts from the Fourth Georgic of Virgil:

"First, find the bees safe shelter and abode
Where no winds enter . . . .
And where no sheep, no kids with frolic horn,
Trample upon the flowers, nor roving calf
Swish thru the dewy grass and tread it down.
Let not the scale-backed, painted lizard peer
Too nigh the bees' full barns, nor thievish birds,
. . . .

But flowing fountains near the hives should be,
Still pools with fresh, green mosses bordered round,
And thru the grasses a small rill should run.
Above their portals let a branching palm
Or large wild olive its deep shadows throw,
. . . .

Around the place let verdant cassias grow,
With much strong-scented thyme, and let the stream
Flow thru sweet beds of thirsting violets.
The hives themselves, if stitched of hollow bark
Or plaited basket-work, should have but doors
Of narrow compass . . .
Thou likewise o'er the beehives' crannied sides
Wilt smear warm clay, patting it down, and then
Strew leaves on top . . . . .
They fondly tend, with sweet mysterious joy,
The young brood in the nests, and skilfully
Sculpture the wax and mould the honeycomb.
At the same season, when the caravan
Pours from the hives, and skyward, starward, soars
Along the glowing air . . .
. . . . take heavy-scented herbs,
Bruised balsam and the wax flower's humble weed,
And sprinkle with their juice some chosen spot
And clash loud cymbals like a Corybant.
At this balm-breathing place the swarm will stay
And rear, as in their wont, the future brood.
. . . .

Thy art must govern their inconstant mind.
The task is easy. Thou hast but to clip
The leaders' wings; for when these lag below,
No common bee will soar aloft, nor dare
Give marching orders to the bivouac.

They are the only creatures to possess
Offspring in common, and their city build
Of undivided houses, where they live
Obeying mighty laws. . .
Warned of approaching winter, they employ
Their summer's day in toil, and store their gains
As common treasure. Certain chosen ones
Forage for food and, so it is agreed,
Keep busy in the fields while others, pent
Within the walls of houses, firmly mould
The bottom of the comb. Others lead forth
Their infant brood in air, the tribe to be.
Still others closely pack the honeydew,
Till every cell with nectared sweet runs o'er.
For others 'tis the apportioned task to stand
Gate-sentinels, and keep alternate watch
For auguries of rain and cloudy skies.
These at the gates receive the little loads
Of the home-comers, or, lined up for war,
Fight the dull drones and bar them from the hive.
. . . . . The oldest ones
Take counsel for their city, raising walls
About the honied treasure . . but the younger sort
Come late at eve and weary, bringing home
Thigh-loads of flowery food. . .
Sometimes they lift small pebbles, as light boats
Bear ballast thru the waves; and weighted so,
They keep their balanced flight thru stormful air.

But veriest marvel of the ways of bees
Is that . . . . . from leaves
Of fragrant herbs the mothers with their lips
Breathe in their offspring, and all virginal
Give birth to kings and tiny citizens,
Repeopling so their waxen state and throne."

So much that is lovely is omitted! But some of the rest we must have next month.

FROM NORTH, EAST, WEST AND SOUTH

In Southern California.—Dry and still more dry are the weather conditions thruout southern California. It is a serious question as to whether the early rains were a help or an injury to next year's honey crop. Sage, that put on two or more inches of growth after the rain, is now drying up. This severely injures the prospects for sage honey next season. Perhaps we count too much on expectant rainfall. An old Indian once said when asked if he thought that there would be much rain: ''Don't know; this all time dry country; no big trees, all time small brush.'' He may have been right as it is only on the mountains and along the waterways that we find natural timber of any size.

Considerable off bloom is found on the different varieties of fruit trees. Only a week or two ago a pear orchard was in full bloom. This was probably caused by the early rainfall, followed by very warm weather. Lately we have had several days of ''norther,'' a severe, dry and dusty wind. We always hope for a rain after one of these winds; but, as they blow from the north and east, we seldom get any moisture for some time after.

As the year draws to a close, beekeepers begin to ask themselves questions somewhat like the following: Did I make any money on my bees in 1921? What are the prospects for good honey prices in the future? Are bees likely to continue to be considered good property and to have a value commensurate with their earning ability? The first question can be answered only by the individual beekeeper. As to the second, I feel confident that good living prices will prevail for years to come. Values will always fluctuate, and we can hardly expect ever to see the war-time prices again, nor need we expect the extremely low prices of a few years ago. In answer to the third question, I would say that bees will always be considered good property and will have a value more or less in proportion to their earning ability. Right now bees are being offered much cheaper than a year ago and may go even lower before another honey season. It is quite often the case that when a beekeeper needs money, he will sell the ''goose that lays the golden egg.'' Also once in a while some one wants to leave the locality or go out of the business and offers his bees and equipment at a bargain. These are opportunities that every real beekeeper should take advantage of.

For a term of 26 years, thru lean years and fat, with crops varying from nothing to 200 pounds per colony and with prices ranging from three and a half to 22 cents per pound by the carlot, and good crops at each time, with bees ranging in price from the cost of the hive or less to $15 per colony, I can still say that the business has been satisfactory and has given good returns for the time and money put into it. We know of nothing that a young man can go into, capital and labor considered, that will give better returns during a period of years. The big proviso in connection with these statements is that the young man must have ''pep'' and must thoroughly enjoy the work.

An old boyhood friend of mine once said to me: ''If I could only let my business run itself or let others run it satisfactorily for one or two months in the year, as you beekeepers do, I would be very willing to take the responsibility for the other ten or eleven months. But, you see, it is like this. I am in the chicken business, and I must be at home Sundays and week days, mornings and evenings, 365 days in the year.'' This man enjoys his work and is successful financially, and yet he longs for a little time for recreation. But our business is different in many ways and takes a different management. Our work is not continuous thruout the year, but neither do our returns come in every day, week or month. We must often distribute the returns from one sale over a whole year. Day after day do we work, with no financial reward for several months or even more. And last but not least, the work often gets monotonous, as a fellow has to work day after day alone, with no one to speak to from morning until night.

Two men from Arizona were making a tour of southern California during the month of November and called to see me. They were seeking information in regard to shipping packages of bees by mail or express. In their locality they have a peculiar condition that should be good for this line of work. Colonies under normal condition get very strong during the early spring months, and yet the real nectar flow does not come until the summer months. A great problem with the beekeepers of this district has been to retard early brood-rearing, and thus try to prevent swarming. It has been some problem, but by doing this they save part of the stores that would be consumed by a somewhat useless early brood. The idea now is to allow the bees to get strong early, and then to sell several pounds of bees from each colony. By this method nature is allowed to take its course, and besides a large part of the low-grade honey, that would necessarily have to be sold at a low price, can be used in raising these young bees. The northern beekeepers need young bees early, and these southern beekeepers have more than they need. Co-operation will be a good thing for both. L. L. Andrews.

Corona, Calif.

FROM NORTH, EAST, WEST AND SOUTH

In the Northwest.—The past October has been the warmest October for many years according to the report of the Weather Bureau. The rainfall has also been less than normal up until the middle of November. Up to the present writing (November 29) there has been no killing frost in many parts west of the Cascades. Recent heavy snows in eastern Oregon and a silver thaw in the Portland section may have done some damage.

Beekeepers who neglected to feed their light colonies earlier in the fall should prepare to give them frames of candy, made after the recipe found in A B C and X Y Z. The writer finds it convenient to use an empty but wired frame as a mould into which the hot candy is poured. A cardboard is tacked to one side to keep the candy from running out until cold. When cold the frame of solid candy is placed in the hive near to the cluster.

Honey is moving in a satisfactory way and will apparently be well cleaned up before the new crop appears.

American foul brood has recently been found in Deschutes County for the first time. Three samples have been determined by the Bureau of Entomology. One sample came from Tumalo and two samples from Sisters.

Beekeepers should keep in mind the meeting of the Oregon State Beekeepers' Association, which is to be held at Pendleton, Ore., January 26-27. H. A. Scullen.

Corvallis, Ore.

* * *

In Texas.—There has been too little rain in November for the best development of honey plants. Broomweed, asters, yellowtop and kinnickmick are still in bloom and bees are still at work. Beekeepers took advantage of the cool period in the middle of the month to take the remainder of the honey crop. Because of dry weather very little honey has been taken from the hives since the first of August—no honey flows and robbing too fierce. This honey comes in very handy now, as the demand for bulk comb is yet strong and the supply is almost exhausted. The latter part of the month the bees were extremely busy collecting propolis from Mexican persimmon. It looks as if they expect winter soon and intend to be ready.

Our first frost occurred the morning of November 28, but was not severe enough to hurt anything. The honey plants are in good condition. Horsemint seedlings are numerous and of good size. Huajilla has put on the growth required to give a blooming next spring. Agarita, altho not rating as a surplus honey plant, is very important as it furnishes much pollen and nectar for brood-rearing. At the present time it is in better condition than for years. This is one of the plants which, like the tulip tree of the East, is a surplus producer if the bees are strong early in the year.

Mistletoe, the plant that starts off our brood-rearing, is just ready to bloom. This plant is peculiar in that it blooms in December and January, and ripens its fruits the next December and January. The berries are now ripe, and the flower buds are ready to burst into full bloom whenever there comes a bright dry day. The pollen is yellow-green, and for the next two months on every warm day the bees will bring in great quantities of it. While mistletoe is a parasite, it is more prevalent than many other species of bee plants.

Another species of horsemint has shown up. This is a perennial species with narrow leaves and flower resembling those of *M. Punctata* but smaller. It blooms from April to December and bees work it all the season. Its habitat, so far as known, is the sandy land of the Gulf Coast prairie. It is believed that this mint exists in large quantities over a considerable area. This may help to explain some of the peculiarities so far unexplainable relative to horsemint honey.

Honey plants, often ones of considerable importance, are continually being brought to notice. This fall the hills of the Edward's Escarpment country were white with the bloom of the bush-bonnet (*Eupatorium ageratifolium*). This plant blooms in May and then again in October and November. This fall it bloomed heavily and bees worked it heavily. As an ornamental this plant should be in every yard.

Thruout south Texas there is cultivated a shrub called Russian Pea or Bird-of-Paradise flower. The plant is a near relative to mesquite and retama. It is easily recognized by its showy yellow flower and the very long bright-red stamens. The plant (*Poinciana gilliesii*) is a native of West Texas and New Mexico. In a few places east of the Pecos it has escaped and seems to thrive. This plant is peculiar in that it secretes its nectar late in the afternoon. During the past summer bees would begin working this plant about 4 p. m. and continue until dark. Where this plant is abundant it is valuable, as the heat of summer seems to increase the amount of bloom.

A. H. Alax, state queen-breeder, and C. S. Hear, bee inspector, have spent a month inspecting bees in Wilson County. They report the bees of that county in fine condition and foul brood not so prevalent as commonly supposed. They say that the honey plants are in fine condition, horsemint being especially good.

The movement of honey is quite rapid, and the demand is growing stronger. Little honey, however, is in the hands of the pro-

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ducers. Many beekeepers offered their bees for sale on account of the low price of honey. These offers were taken almost as soon as made. As a whole the beekeepers are optimistic. H. B. Parks.

San Antonio, Tex.

* * *

In Wisconsin.—"Cloverland honey from Cloverland." That slogan ought to sell honey if anything can; and if the beekeepers of northern Minnesota, the upper peninsula of Michigan and northern Wisconsin ever unite in an effort to spread their propaganda, the rest of the world will need to hustle. We folks from Wisconsin admit that we have one of the finest beekeeping regions in the world, but even in this region there are better localities. Little has been said about northern Wisconsin and upper Michigan; but, if ever there was a paradise for beekeepers, that is the place—a honey flow that lasts from spring to September and in which a surplus from raspberry, clover, basswood and fireweed can be secured, beside a further surplus from fall flowers.

The first of August showed little surplus in northern Wisconsin this year, but after that date a big surplus came to those who were in the favored regions or else moved their bees into fireweed sections. Beekeepers who are planning to make a change should look over this land of opportunities, for not only is it a wonderful bee territory, but also one may hunt and fish to his heart's content.

A farthest-north meeting of beekeepers was held at Iron Mountain, Mich., Nov. 17 and 18, for the benefit of the beekeepers of upper Michigan and northeast Wisconsin. Mr. Kindig and Mr. Uhlman represented Michigan, while the writer and C. D. Adams helped to spread the gospel from Wisconsin. The most interesting thing of all was the beeyard of a Mrs. Eskil on the outskirts of the city. Mrs. Eskil packs her bees in single cases with about three inches of packing. She reports the best of success, and we wonder whether bee cellars are really better or beat.

Among the new lines of marketing attempted in Wisconsin this year was a marketing exposition, which was held in Milwaukee Dec. 5 to 10. The exposition was held in the city auditorium where all the agricultural marketing organizations made displays of the products which they offer for sale. The Wisconsin Honey Producers' Co-operative Association had a booth where samples of honey in 8-ounce jars were disposed of to prospective buyers. This show will be an annual affair, and it is hoped that the conventions of each organization represented will be held during the same week.

The State Beekeepers' Association held their meeting in one of the committee rooms of the exposition auditorium, and, in spite of the fact that this was a new innovation, the meetings were well attended.

Wisconsin honey is rapidly disappearing from the market, and there should be no old stock on hand when the next harvest begins.

Fall conditions in Wisconsin have been somewhat similar to those of 1920, and many of our beekeepers left the bees with an abundance of stores in October to find the the bees light again in November. It is difficult to explain the cause; but for some reason the bees have used up an unusually large amount of stores, and several beekeepers, who packed their bees early, report that they have had to unpack and feed a second time. Beekeepers thruout the northern states should be prepared to make an early examination of their bees in the spring to see that sufficient stores are present, as it seems quite likely that even the strongest colonies will be in need of stores for spring brood-rearing. H. F. Wilson.

Madison, Wis.

Bees in this section of the country had their last flight in October. November 7 snow came, and it snowed almost daily for two weeks. It stayed cold, with the snow eight inches deep. The lowest temperature was 12 degrees above zero. Most of the bees to be wintered in the cellar were put in around the 20th, covered with snow. The last few days in November turned warm again with rain, and on Dec. 2 all the snow was gone again. This season the bees could have been placed in the cellars to their advantage the first week in November.

Honey continues to move rapidly, and local beekeepers will be sold out by Jan. 1. Many stores will be without local honey on their shelves by that time. This would not be necessary if our co-operative marketing association were now in operation. In our opinion this is the only possible solution of the problem. Our local beekeepers cannot and will not buy honey and put it up for the trade. A state bottling plant, with a uniform blend of honey, all with the same uniform label, "Association Honey," would be the best means of supplying the established trade of individual beekeepers who have not enough honey to supply the trade the year around. Edward Hassinger, Jr.

Greenville, Wis.

* * *

In Indiana.—The season's crop in northern Indiana has proved to be somewhat better than the average. Had it not been for the large fall flow following heavy rains in August, there would have been a considerable shortage. The honey is

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of fine quality and is moving well, the local market being exceptionally good.

With plentiful rainfall thruout the last part of the season, the clovers apparently are in excellent condition. The next season's crop, however, will be determined chiefly by the winter and spring precipitation, and by the weather during the clover flow. It's a wise prophet who really can forecast a honey crop.

The local and shipping demand for honey this year is very much greater than usual. In fact, more honey is being sold to the consumer than ever before both thru the retail grocers and direct from the producer. There are probably a number of reasons. One is the unusual shortage of fresh and canned fruits. A recent report in the Chicago Journal of Commerce declares the market almost bare of canned fruits of all kinds. Another cause for increased sales of honey is the increased amount of advertising, both local and in journals of nation-wide circulation. There is no doubt but that the efforts of the American Honey Producers' League, as well as the advertising of some of the large dealers, has contributed very materially in creating a demand for honey in every part of the United States. Furthermore, many carloads of honey put up in five and ten pound pails are being shipped from the West to our large cities and distributed by canvassers directly to the consuming public in a house to house campaign. Where reasonable prices are demanded it helps the market rather than depressing it, as would be the case if it were left in the hands of brokers and commission men in the large centers.

We still have in our midst the fool beekeeper who persists in selling his product at a price below the market and then brags how much he can sell. The bees, you know, work for nothing and board themselves, and, as his time isn't worth anything, he can afford to undersell the grocer and everybody else. As a rule, he doesn't take a bee journal nor attend any meetings of beekeepers; consequently he knows all about bees and selling honey. If one were to attempt to buy his crop, he would demand about twice the price he asks in retailing it. To make things more interesting he often will advertise in the local papers to deliver honey at about the price quoted by commission men in the large city. This practice of underselling the grocer, probably more than anything else, prevents the marketing of honey at a profit. If one were to count all the costs in the production of honey, depreciation, interest, labor, etc., it will be found that, in most localities, these costs are above the present wholesale prices quoted by city dealers. E. S. Miller.

Valparaiso, Ind.

In Michigan.—At this time of the year the real strenuous days of the season, so far as northern Michigan beekeepers are concerned, are over. The honey harvest is completed, the bees packed for winter, and the honey nearly all sold; and yet there are at least a few things to which it might be well to call attention, which are of vital importance to the success of the coming season. First, we should continue to talk honey and sell honey until it is all sold, for we all know the effect a bare market has in stimulating a fair and just price. The buyers cannot say, ''You know that there is a great deal of last season's honey left over.'' And then I just believe it sharpens the appetite to be without it a little while previous to the new offerings. Second, there is nothing more important or vital to the success of out-of-door wintering than a good windbreak. Do not build a solid fence, it is nearly valueless. I have had one for years and believe I speak the truth. Wind has a tendency to cling to the surface and will sweep over the fence and down again in a very short space. Build the windbreak to break the wind. Place the boards several inches apart and note the effect. It is a real windbreak. However, nothing is better than a natural brush-break of short bushy shrubbery or scrub trees. I wintered perfectly the past year with the proper windbreak, where for many years I failed for lack of it.

I am experimenting this winter with 45 colonies, placed in a thick second-growth wood. They have no packing overhead except a canvas cloth, a bag and several thicknesses of newspapers. I am also placing 16 colonies in the shelter of a wood, orchard and other brush, along with a neighbor who has wintered successfully year after year regardless of the severity of the weather. The secret of his success is the windbreak, which protects his colonies, spring and fall, and causes the snow to pile up over them in the winter, giving them the necessary protection in our latitude from zero weather. It was not until I had written the above that I read E. R. Root's timely article on ''The Value of Windbreaks.'' However, I feel that a good protection from the prevailing cold winds is so necessary for good wintering that I am going to leave it as a second warning to those who have neglected the matter.

Remember also that bees packed in winter cases should have protection against the severe winds, and it will pay big returns for the labor and expense. Northern Michigan very often has a heavy short white honey flow and all supplies should be purchased and assembled during the winter and spring months to be in readiness for it. Every year I have many neighbors who leave their farm

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work to come to me to get a super or two, or have to hive a swarm of bees, when the loss of time could profitably be avoided. Again, this is the logical time to read and plan and make preparations for any experiments we may wish to make the coming season. The snow is piled high and the winds cold, and, on these stormy days when we cannot do much out-of-doors, we can occupy our time to advantage in reading and planning and working in the shop.

East Jordan, Mich. Ira D. Bartlett.

* * *

In Pennsylvania.—The late fall has tempted many beekeepers to delay unusually long in packing or cellaring their bees. In many cases, those who usually pack in October did not have the work all done in late November, and the cellaring usually done in early November has been put off until the time of this writing (Dec. 3). There are still many bees waiting for that last flight. This is dangerous practice. As soon as brood-rearing is over, the bees go into their winter rest and should not be disturbed. It is a bad thing to put bees in the cellar before all the brood has emerged and the young bees have had their flight. This usually occurs in New York and northern Pennsylvania by the first of November. Bees should be placed in the cellar at this time before hard freezing and snow come.

Outdoor packing may well be done any time after the fall honey flow and before brood-rearing is over. Less mixing of the flying bees and less harmful disturbances generally will result by placing the hives in packing cases, while the weather is warm and the bees are flying, than after they have clustered.

Many bee-cellars are giving better results than they did four years ago. The two main improvements have been higher temperature and less ventilation. The cold cellar with a lot of ventilation, where bees have wintered badly, usually makes a good cellar by closing the ventilators and providing better insulation.

Hundreds of new packing cases, well made and heavily insulated, have been built in the past summer. The quadruple case seems to be in the lead, altho many very good cases of other styles are seen. Some still cling to the idea that a thin-walled chaff-packed hive with no bottom insulation or a packing case with no bottom insulation is good enough. The nemesis of such beekeeping is spring dwindling, European foul brood and a short honey crop.

More feeding of granulated sugar has been done this fall than for several years. Now that sugar is back to a normal supply, beekeepers should make a regular practice of feeding about 15 pounds of sugar to each colony in October, to insure good winter food and prevent the consuming of aster and goldenrod honey. The goldenrod flow was unusually heavy this fall, and thousands of colonies crowded the queens practically out of the brood-nests in September. This may result in a shortage of young bees and in dwindling colonies in winter and spring.

State College, Pa. Geo. H. Rea.

* * *

In New York.—The Western New York Honey Producers' meeting at Buffalo, Nov. 15, was not as well attended as usual, about 75 being present. But unusual interest was manifested in the discussions, especially on factory or homemade supplies and the marketing of honey. The consensus of opinion was that it does not pay the majority of beekeepers to make their own supplies, considering the recent reductions in the price of factory-made goods and that a big per cent of homemade supplies are not made true, being but poor substitutes, to say the best.

The matter of marketing and the selling price of honey was the real issue of the day. Following a very interesting talk on marketing by Mr. Marks of Silver Creek, a very lively discussion occurred. The great variance in prices that have obtained thruout the country has been manifest to a greater or less extent in western New York, and the price-cutting evil has made some rather hard feelings.

As has been customary in the past, the Association thru its crop and market committee sent out price recommendations, advising beekeepers not to sell at less than the recommended prices. The great majority of members held for and received this price, while a few sold for considerably less. This, of course, would not have been so bad had the sales been in a jobbing way, but it was mostly in the retail trade. A few members sold as low as 50% under the recommendations, while others in the same neighborhood were selling for association prices. Naturally the man holding feels peeved at his neighbor and brother member who undersold him, and it is evident unless something can be done to eliminate this condition that the Association, which has meant thousands of dollars to the beekeepers here during the last decade and, what is more, has built up a fraternal feeling among over a hundred beekeepers, must suffer. I have no remedy to offer, but I cannot help but notice that those who are first to cut the price never spend any effort or money in advertising. Supposing all beekeepers resorted to the same tactics, what would the outcome be?

In common with beekeepers everywhere we became interested in annual sweet clover and bought an ounce of seed last spring;

sowed it in a little plot about the first of May and about the first of June transplanted it into the open field in rows 3 feet apart and 18 inches in the rows, and cultivated the same as we do corn. Altho this was the dryest summer in history it made a growth of from 4 to 5 feet and ripened its seed. The ounce gave us plants enough for about one-half acre, and when harvested made a nice little jag on the Ford ton truck. We tried to thrash this out with flails on the barn floor but could not get nearly all the seed off the straw in this manner. However, we succeeded in getting enough unhulled seed and leaves to fill a grain bag, and we are now wondering if we can sow this unhulled seed next spring and have it mature next summer or whether we should sow it this winter to give the elements a chance to rot off the hulls. Who will tell us? We might add that we don't feel so overmuch enthused about this annual, and cannot see any great advantage that it is going to have over the biennial, which is being grown with increasing acreage and is the only clover seeding that has withstood the past season's drouth in this locality. [Your Hubam seed should be scarified to sow next spring.—Editor.]

It seems that a good many of our neighbors in Ontario are still using the draining method for cappings, having many barrels of cappings candied solid to render during winter. They seem to feel that the capping melters are not a success, being either too slow in operation or else discloring the honey. In our practice we drain the cappings during the day while we are uncapping and at the end of the day run them very rapidly over a Peterson melter, having a three-burner oil stove to furnish the heat. In this way one man will tidy up the honey-house and render all the cappings from a day's extracting in about two hours' time in the evening, leaving everything ready for a clean start next morning. Running the cappings thus rapidly we find but very little discoloring of the honey, and we like it much better than having a lot of barrels of cappings standing around. H. M. Myers.

Ransomville, N. Y.

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In Georgia.—I do not think that bees in this state have ever gone into winter quarters in better average condition. If we can have the right kind of weather next spring, this means a good lot of bees on hand ready for the early nectar that usually comes, especially in the Coastal Plain region of Georgia and adjoining states. The fall crop has been unusually abundant, but in this locality has been mostly left with the bees. The early crop was mostly sold long ago, so that there is now little upon the market in this vicinity and prices are irregular.

In some parts of the state the early crop was fairly good, and is selling fairly well, considering the cheapness of cane syrup, which is the strongest rival that honey has in this part of the country. It is only the best grades of honey that will compete with it for table use.

The Southeastern Fair at Atlanta had a very creditable honey exhibit from different parts of this state, Tennessee and Alabama. The Georgia State Fair at Macon had a better exhibit of honey than was expected, and the large building that was tendered the Georgia Beekeepers' Association was reasonably well filled with honey, bees and apiarian supplies, so that those interested could get some idea of the methods of modern apiculture and the magnitude and importance of the industry in the state. This makes a good start for the association in the direction of exhibits and was the means of selling a good lot of honey on the spot. Next year it ought to be very much better in every way, and probably will be.

I was glad to see a good deal of interest taken in improving the bee pasturage in the state, and several encouraging reports were received from those that had scattered seeds of sweet clover. I saw some stalks of it growing where seed had been scattered in Bermuda grass without any sort of cultivation, which encourages the hope that it can be easily raised in Georgia, especially the Hubam variety. If all beekeepers will make it a point to start a small patch of it next year and master the problem of raising it and making it pay as a money crop, aside from its value for honey, and show the farmers how, there is no telling what great things in the agricultural and apicultural lines may result from it.

There are many thousands of peach trees in the northern half of the Coastal Plain and in the Piedmont region, and I saw at the state fair my first sample of honey that tasted like peaches. If we could produce such honey by the ton we could sell it like hot cakes; but unfortunately it is a rare thing to get any at all—partly, I suppose, because the bees are not strong enough at the time peach trees bloom, but mostly because of unfavorable weather conditions.

Norman Park, Ga. T. W. Livingston.

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In Ontario.—As mentioned in December Gleanings, November was ushered in here in Ontario with a real wintry appearance, some six inches of snow falling during the first few days of the month. But the white mantle soon disappeared, and up to Dec. 9 the late fall and early winter have not been unusually cold.

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In fact, I should say that the temperature has been above the average for the time of year. But while we have had little cold weather, yet here in our immediate section we have not had a day since late October in which bees could fly freely. And this uncertain weather is responsible for the fact that our 65 colonies, which are to go into the cellar, are still outdoors. We have waited in vain for that fine day for a flight, but if all goes well they go inside tomorrow morning (Dec. 10). I expect they would have been better off inside two weeks ago; but, of course, we naturally hoped for another flight before placing them inside. No matter what can be said against outdoor wintering, one thing is sure, there is less care in fall and spring with outdoors bees, as when once they are packed in October we pay little attention to weather after that.

The Ontario Beekeepers' Association met in Toronto on Nov. 22, 23 and 24. There was a large attendance—about 300 I think—just as there is always a large attendance at the meetings of this association. In addition to the representative gathering of members of the craft from here in Ontario, we were favored with the presence of a number from across ''the line,'' and some from sister provinces of the Dominion. New York had a splendid representation, among whom I might mention Mr. and Mrs. House, Mr. and Mrs. Stone, Messrs. Myers, Lesser and Kinyon. E. R. Root came unexpectedly, but he is always welcome; and when he missed the evening train on which he intended to leave for home, thus having another session with us, it was the old story of one's loss being some one else's gain. Indiana was ably represented by the inimitable Jay Smith, who had two addresses assigned to him, both on the subject of breeding and rearing queens. Mr. Smith understands his business all right, and this knowledge, coupled with a keen sense of humor, always assures him of a good hearing in any gathering of beekeepers.

C. E. Petch gave a splendid talk on beekeeping in Quebec province, while Mr. L. T. Floyd, Provincial Apiarist of Manitoba, gave us a delightful and much useful information on the subject, ''Beekeeping in the Northwest.'' So, all told, the gathering was more than local, and the information given by these men from the United States and provinces of our Dominion was of such a nature as to interest all, many lasting impressions being given. Many of our largest producers were present, and the discussions carried on by old timers like Messrs. Sibbald, Krouse, Holtermann, Chrysler, McKinnon and others, who number their colonies by the hundred, always bring out something of value. Then we have a fine lot of younger men coming on in the business, and many are not slow to express their opinions when any debatable question is on; so it is an assured fact that the conventions of the future will not lack material for profitable meetings.

It would take up too much space to enter into details of the various addresses given, and I shall not attempt to make even a brief reference to the sundry good things of the eight sessions. Aside from the regular issues of beekeeping commonly discussed, possibly the address given by the Minister of Agriculture for Ontario, Hon. Manning Doherty, stirred up more interest than all other matters. He spoke on the subject of ''Marketing,'' and to the surprise of many present, in the course of a vigorous address he strongly advised the association to get together at once and form a co-operative union for the purpose of handling the honey crop in future years. Mr. Doherty is a forceful speaker and his earnest manner carries an audience with him, so there is no question but that he convinced the great mass of the beekeepers present (for the time being at least) that his ideas were the proper ones to act upon. I feel skeptical at this stage as to the scheme's working out at the present in a successful way, for as yet we can sell honey too easily. This may seem like a foolish statement, but facts seem to point to the conclusion that all the co-operative associations that are making a success were driven to take action because of dire necessity. That is, conditions had reached such a stage that there was no profit in their business any more, and they had to get together to save themselves from bankruptcy. Human nature is about the same among beekeepers as in any other class, and until we can get enough cohesion among the great mass of producers, so that nearly all will join any association formed to further the progress of its members, I can see little prospect of success. So far as any little influence I may possess is concerned, I certainly feel like helping any legitimate movement along that is for the good of all and injury of none, and by this I would include consumers of our product as well as producers. A strong and representative committee was named to look into the matter and take any action they may see fit. Said committee includes the following men, all well known to Ontario beekeepers: Sibbald, Holtermann, Chrysler, Krouse, Weir, and Secretary Millen of Guelph, who is handling all correspondence in connection with the committee's work at present.

E. T. Bainard of Lambeth, Ont., is president of the Ontario Beekeepers' Association for the ensuing year, and Prof. Millen of Guelph, O. A. C., is secretary as usual.

Markham, Ont. J. L. Byer.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Circumventing Ants in Florida. Here are some photos taken on Key Biscayne, near Miami, of apiaries owned by Hugh M. Matheson. Mr. Bartholomew, formerly of the Bureau of Entomology, Washington, D. C., is in charge of the apiaries. He was in a fair way to make a total of 1000 colonies as he expected to do. I found Mr. Bartholomew fighting the Florida ants in a unique way. Each of his yards (four at that time) had ditches around with water in them even at low tide water, and all the ants inside of the ditches have been exterminated. Since ants do not like to swim the water they have to look on at the bees from the opposite shores with envious eyes. Mr. Bartholomew stated that ants are his bees' greatest enemies, which statement I can second, having lost several colonies myself thru their persistent attacks. Key Biscayne being a sand-bar island, the actions of the sea tides serves a good purpose in this instance.

An apiary of Mr. Matheson near Miami, Fla., surrounded by ditches that ward off the ants.

I am also enclosing a picture of my back-lot apiary next to my garage and chicken run in the heart of our city. You will notice the heavy covers on the hives. I am experimenting with them and thus far have found them of good service in this subtropical climate. I have no other shades than these covers, padded inside with about a dozen sheets of newspapers. When these covers are removed the sub-cover is only normally warm. No need to say that in the winter season it works admirably in keeping the bees nice and warm even in the coolest nights (but not too warm).

Miami, Fla. A. L. Hefinger.

Heavy hive covers in an apiary in Miami, Fla., that serve instead of shade.

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The Winter Nest. "What about a winter nest of empty cells for bees to cluster on?" I hear some one say. As many know, I do not for a moment believe that many empty cells are necessary for bees to cluster on; in fact, I might say that I know that such is not the case. I have tested the matter out thoroly, and I happen to know that the most of the extensive producers in Ontario entirely agree with me on this question. In the October issue of Gleanings, page 617, Mr. Demuth well says, "There is greater danger in having too many vacant cells than in having too few;" and I have always maintained that a big winter nest is the cause of more winter losses than all other causes combined.

Markham, Ontario. J. L. Byer.

Doing Our Best.—By Bill Mellvir

(With apologies to Walt Mason.)

If every one would do his best in watching for disease, existence would be trebly blest for all the honeybees. If every bee crank would inspect his brood-combs twice a year and with his weather eye detect the first germ to appear; then swat the thing right in the neck and knock it galley west, we'd run them off the map, by heck, if each would do his best. *Bacillus larvae* would not eat the baby bees alive. We'd drive them out, so help us Pete, from each and every hive. No sunken cappings would we find; no toothpick roping test; no gluepot smell, the luscious kind, if each would do his best. *Bacillus pluton,* yellow beast, we'd banish from the land. No longer could it have a feast on larvae, young and bland. No larvae with Mongolian hue, there'd be, because this pest had sucked their life blood thru and thru if each would do his best. The brood diseases that we know would quickly fade away, and those who wished a slice of woe would have to search all day. No Gloomy Gus could then complain and holler like the deuce about diseases raising cain and microbes breaking loose. We'd hear less talk from grumbling hicks about the season's punk, for then they'd have to can their kicks or scrap them with the junk. The knockers would crawl in their shells and give us all a rest, for all would be a wearing bells if each would do his best.

GLEANED BY ASKING

Geo. S. Demuth

QUESTION.—If I lend my extractor to my neighbor, how can I clean it so that I may be sure that there is no danger of foul brood if any of his colonies happen to have either kind of the disease?
Colorado. Vernon L. McClure.

Answer.—The important thing in cleaning an extractor, which has been used in extracting honey stored by colonies having American foul brood, is to wash off thoroly every particle of honey from all parts of the extractor. It is safer to wash away every particle of honey, thereby removing the medium by which the disease may be transmitted, than to try to sterilize the transmitting medium. To make sure that the extractor is thoroly clean it will be necessary to rinse it out with clean water after it has been thoroly washed, in order to take away any remnant of honey that may be left after the first washing. Hot water is, of course, better than cold for this purpose, because it more readily takes up the honey. Scalding out the extractor with boiling water will not sterilize an extractor contaminated with American foul brood, but a thoro cleansing should render it safe. In the case of European foul brood there is not much danger of transmitting the disease thru the extractor.

MOVING BEES SHORT DISTANCES IN WINTER.

Question.—I shall have to move my bees about a quarter of a mile. When is the best time to do it, now or later? F. R. Davis.
New York.

Answer.—The bees can be moved short distances, without much danger of many going back to the old location, any time during the winter after they have been confined to their hives for a few weeks. Probably March or early April will be as good a time as any to do this successfully in your locality. They should be moved before they begin to fly freely in the spring, because if left until spring activity begins many bees would go back to their old location. They can be moved in midwinter if more convenient.

CAUSE OF HEAVY LOSS IN CELLAR.

Question.—I have been losing from 50 to 75 per cent of my colonies in the cellar. The temperature never goes below 38 degrees and never above 45 degrees. The inside of the hives is always wet and mouldy. What causes this trouble?
Wisconsin. C. H. Gebhardt.

Answer.—It is not possible to tell from your question what caused such a heavy winter loss. The mould and dampness which you noticed in the hives tell us that the bees were too active to winter well, and also that the temperature of the cellar was too low to prevent the condensation of the moisture within the hive. Increasing the temperature of the cellar a few degrees above that which you had, will reduce the condensation of moisture within the hive and at the same time reduce the activity of the bees in keeping warm, thus reducing the amount of water vapor which they give off. While the temperatures you mention are rather low for best wintering, the temperature alone is not a sufficient explanation of a winter loss of 50% to 75%. If your colonies were strong in vigorous young bees in the fall and were put into the cellar just after a good cleansing flight, about the only explanation of the heavy winter loss is that of inferior winter stores. No matter what temperature is maintained in the cellar, if the stores are poor the bees become active from discomfort caused by indigestible material in the stores, and of course wear themselves out rapidly, giving off much moisture as their activity is increased. Those who are most successful in wintering bees in cellars, are careful to see that their colonies are supplied with the best of winter stores, such as the best white clover honey or sugar syrup. When the bees gather inferior honey from fall flowers late in the season they store this between their clustering space and the earlier-gathered honey above, which arrangement causes them to use the last-gathered honey first. When they do this the trouble can be corrected by feeding each colony about 10 pounds of thick sugar syrup after brood-rearing has ceased but before the bees are put into the cellar. The bees will then put this syrup where it will be used first, leaving the poor stores until spring when no harm results from their use.

CHICKENS EATING BEES.

Question.—Will chickens eat bees or disturb them in any way if the hives are located in the chicken run? Ruth Nicolls.
New York.

Answer.—Usually chickens do not eat worker bees. Sometimes a few chickens of the flock will learn to catch and eat drones, but carefully avoid the workers. In doing this they do not disturb the colonies to any extent, for in catching the drones the chickens learn to be stealthy and careful. If many chickens are confined in a small run, they sometimes learn to eat the workers, usually catching them as they are returning heavily laden with nectar. For this reason it is not advisable to have colonies of bees in a run where many chickens are confined, but when the chickens have the freedom of a large run or an orchard they do not often bother the bees.

DO PACKED COLONIES BECOME TOO WARM?

Question.—After packing my bees for winter this fall I noticed some bees at the entrance fanning their wings. The entrance is reduced to ¼ x 3½ inches. Is there danger of their becoming too

warm and starting brood-rearing since they have plenty of stores? Jacob Noordiloos.
Washington.

Answer.—No, not in the fall. After brood-rearing has been suspended in the fall, a few warm days will not cause the bees to begin it again; but later, in December or January, brood-rearing may be started if the hive becomes quite warm. However, the inside of the cluster is usually not as warm in well-packed hives when the bees are broodless in winter as in unprotected hives, because the bees generate less heat to keep up the cluster temperature in the packed hives. The packing enables the bees practically to cease generating heat except during the cold spells.

CAUSE OF MOULDY COMBS AND MOISTURE IN HIVES.

Question.—What is the cause of some of the combs in my hives becoming mouldy and moisture collecting on the bottom-boards in winter and early spring? B. Boyd.
California.

Answer.—The moisture which condenses inside the hive during cold or cool weather has been given off by the bees in the form of water vapor, water being one of the waste products given off when honey is consumed. This water vapor which is given off into the surrounding air by the bees condenses when the air comes in contact with the cold walls of the hive. Water vapor is, of course, given off in much greater quantity when the bees are more active in the summer, but at that time the hive walls are warmer, and therefore the water is not condensed within the hive but passes out of the hive thru the entrance as vapor.

SIZE OF ENTRANCE FOR OUTDOOR WINTERING.

Question.—Is it all right to close the entrances of the hives for winter so that but one bee can pass thru it at a time? G. C. Morrison.
Ohio.

Answer.—The danger in making the entrance so small that but one bee can pass at a time is that it is liable to be closed up by dead bees during the winter. It will be safer to make the entrance about ⅜ by 1 inch, but it should not be made so small as this unless the hives are well packed in winter packing cases or double-walled hives. If the entrances are reduced too much when the hives are not well packed for winter, the combs often become mouldy, especially when no upward ventilation is allowed, and because of a lack of protection so many bees die that the entrance may become clogged. For out-apiaries where the bees are not seen during the winter, it is usually best to leave an entrance about ⅜ inch by 1½ inches when the hives are well packed for winter, tho a smaller entrance may be better if the bees are in a home apiary where the entrances can be examined to see that none are clogged by dead bees.

DRONES FROM UNFERTILE QUEENS.

Question.—If a colony has a virgin queen but no drones, will it rear drones to mate with her?
Virginia. Graydon Maxwell.

Answer.—If the young queen can not mate within a few weeks after emergence, she will begin to lay unfertile eggs which produce only drones; but after such a queen begins to lay, she does not mate even tho there are drones in abundance.

EXAMINATION OF SAMPLES OF DISEASED BROOD.

Question.—Where can I send a specimen of comb for diagnosis of brood diseases?
Kentucky. Thos. Kennedy.

Answer.—All such samples should be sent for examination to the Bureau of Entomology, United States Department of Agriculture, Washington, D. C. A piece of comb about 4 x 5 inches, containing dead larvae or pupae, should be cut out and mailed in a wooden mailing box. Tin boxes should not be used, for the comb usually moulds in transit in tin boxes, making proper examination impossible. The sample should not be wrapped before being placed in the box. A suitable box for sending samples can be had for the asking by writing to the Bureau of Entomology. It is not possible to diagnose from empty combs, and no honey should be included in the sample. The name of the sender should be on the package and the letter sent separately, not with the sample.

KEEPING COMB HONEY IN WINTER.

Question.—What is the best way to keep section honey during the winter months?
Pennsylvania. Sylvanus Thomas.

Answer.—Comb honey should be stored in a warm and dry place during the winter. It should not be exposed to rapidly changing temperatures and should never be exposed to freezing temperatures. If comb honey in well-filled sections is subjected to freezing temperatures, the combs will crack because of the contraction of the honey, so that when it is warmed up the best-filled sections will leak badly. If it is subjected to great variations in temperature, there will be a tendency to granulate in any type of honey which granulates readily. The honey should be kept in tightly closed cases or boxes to help retain its delicate aroma, which would otherwise be lost gradually if exposed for a long time in the open air.

CAUSE OF PIN HOLES IN CAPPINGS.

Question.—What is the cause of the small holes like a pin hole in the cappings of comb honey, from which comes something resembling sawdust?
Ohio. Clarence S. Segrist.

Answer.—This is, in all probability, the work of the larvae of the lesser wax moth. You can kill these and thus stop the mutilation of the cappings of the honey by placing a small amount of carbon bisulphide in a dish or shallow pan, placing it above the honey in a tight box, so that the fumes of the carbon bisulphide can penetrate among the combs of honey. The box should be covered to help retain the fumes. If the comb honey is still in the supers, they can be piled in a tight pile and the dish placed in an empty super on top of the pile. This kills the larvae only, and, as there are likely to be eggs in the combs, a second application should be given 10 days later.

TALKS TO BEGINNERS

Geo. S. Demuth

EACH year a new lot of beginners enter the ranks of beekeepers, and are confronted for the first time with the many problems which have troubled beginners in beekeeping ever since the first beginner became enraptured with the wonders of the bee colony. In order better to supply the needs of this eager, questioning throng, clamoring for information, this department is begun in January this year, instead of in February as heretofore.

There are so many things which the beginner should be told during the next six months and so little space available in which to tell them, that in many cases it will be necessary to refer the reader to certain books and bulletins, which should be read carefully, thus leaving the available space in this department for the discussion of a few of the more outstanding essentials of management as the season advances.

Books and Bulletins.

Every beginner should provide himself with at least one of the standard books on beekeeping, but several will be better. He should also secure all of the available bulletins on beekeeping, published by the United States Department of Agriculture as well as those published by the state. The books can be had from dealers in beekeepers' supplies. The bulletins published by the Federal Government, that are still available for free distribution, can be obtained by writing to the Bureau of Entomology, Washington, D. C. Information concerning certain bulletins, which are no longer available for free distribution but which are for sale by the Superintendent of Documents, can also be obtained from the Bureau of Entomology. State bulletins can usually be obtained by writing to the State College of Agriculture. Even the catalogs, put out by dealers in beekeepers' supplies, contain much information of value to beginners since they illustrate and describe the apparatus used by beekeepers. Moreover, the catalogs enable the beginner to become acquainted with many beekeeping terms, thus making it much easier to understand the beekeeping literature. The best thing a beginner who expects to follow the department thru the season can do now is to read carefully the books and bulletins on beekeeping subjects in order that he may better follow the lessons that will be given here each month.

The Theory and Practice of Beekeeping.

It is the purpose of this department to connect up, as far as possible, the literature with the practice of beekeeping. As the season advances, I hope in this department to point out briefly the most important things that need to be done with the bees to secure the best results in honey, and to tell how to do them, discussing each in advance, so that the reader will have time to read up on each topic in the books and bulletins at the proper time as the season advances.

Most of the books on beekeeping are arranged to tell a continuous story from beginning to end and should be read thru from the beginning. Some books are arranged in parts which are more or less complete, so that consecutive reading is not necessary. The A B C and X Y Z of Bee Culture is arranged like an encyclopedia and should not be read consecutively, but should be used as a reference book since each topic is discussed in alphabetical order.

Obtaining the First Colony.

Some of the 1922 class of beginners already have their start in bees. Some, no doubt, have become the owners of one or more colonies by hiving stray swarms or by cutting bee-trees. Others have deliberately taken up beekeeping by purchasing established colonies of bees at the close of the season. Probably most of this year's beginners have not yet secured their bees and are wondering just what is the best way to do this.

Purchasing Full Colonies in Winter.

For those who wish to obtain bees now, about the only way to do it is to purchase full colonies from some beekeeper in the neighborhood. There is no need to be in a hurry about this, especially in the North, and it is usually better for beginners to wait until the bees begin to fly freely in the spring before purchasing any colonies.

Bees can be hauled home, however, in the middle of winter if necessary, without harming them, especially if they are transported in a sleigh or an automobile, in order that they shall not be so greatly disturbed by the jolting of the hive. The entrance should be closed with a piece of wire cloth, so no bees can get out of the hive, and the hive parts (bottom, cover and body) should be cleated together by nailing on three or four pieces of lath to prevent the hive coming apart in transit. The screen should be removed when the hive of bees is finally located where it is to stay. If the weather is cold, the bees will leave the screen soon after the disturbance of moving is over, so that none will come out when the screen is taken off.

Be Sure That the Bees Have Enough Honey.

For those who already have their bees the most important thing, if not already done,

(Continued on page 13.)

JUST NEWS

Editors

MESSRS. Henager, Anderson and Terriberry of the Utah Beekeepers' Association are in charge of arrangements for the meeting of the American Honey Producers' League which will be held Jan. 30 and 31, 1922, at Salt Lake City. Every beekeeper, whether a member of the League or not, is urged to be present.

* * *

The meeting of the South Dakota State Beekeepers' Association will be held at Mitchell, S. D., on Feb. 13 and 14, 1922. J. C. Tjaden, Vermilion, S. D., is secretary.

* * *

The meeting of the North Carolina State Beekeepers' Association will be held in Raleigh at the State College on Jan. 18 and 19. Write J. E. Eckert, State College Station, Raleigh, N. C., for particulars.

* * *

The annual meeting of the State Pennsylvania Beekeepers' Association will be held on Jan. 24 and 25 at Harrisburg. The dates selected are dates during the Pennsylvania State Farm Products Show.

* * *

The Oregon State Beekeepers' Association will meet at Pendleton, Oregon, Jan. 26 and 27. The leading subjects up for extensive consideration are disease control and marketing. All beekeepers of the state and neighboring portions of Washington and Idaho are invited to attend and make this meeting a rousing success. H. A. Scullen, Corvallis, Oregon, is secretary.

* * *

THE MILLER MEMORIAL LIBRARY.

The response to the announcement of this committee that the fund collected from Doctor Miller's beekeeping friends would be used to establish a memorial library of beekeeping has been gratifying. As has already been announced, the original fund is not to be spent for books, but only the income shall be used for this purpose; so that in contributing to this fund, beekeepers are taking part in the establishment of a library to last so long as there are bees and flowers. With this plan it is obvious that as time goes on this library will be increasingly valuable. It is planned to put this library into the care of some one of our leading educational institutions so that the proper care of the books and journals will be positively assured. It may further be pointed out that this memorial library will grow not only from books purchased from the income of the fund but from books and journals contributed by individual beekeepers.

Several beekeepers' organizations have already contributed liberally to this fund. In most cases the names of individuals contributing have been sent in, so that in the published list of contributors these sums do not appear as association contributions. As there are many meetings to be held in the next few months, the committee would urge that at each one the importance and value of this library be set forth and that every effort be made to enlist the support of beekeepers in attendance. In each case the funds collected should be transmitted thru the secretary or some other person indicated to the chairman of this committee.

(Signed) C. P. Dadant, E. R. Root, E. F. Phillips, E. G. LeStourgeon, B. F. Kindig.

* * *

CHANGES IN PERSONNEL AT MEDINA.

The importance of the business of The A. I. Root Company of California, a subsidiary company located at Los Angeles and organized under the laws of California, had so increased that it became necessary to release several of the executives of the home plant at Medina, to take full charge of the Pacific Coast business and become residents there. Accordingly, A. L. Boyden, for a long period director of sales at the home office at Medina, was chosen as ably fitted by long experience to take over the Coast business, and he took active charge there the middle of December. He has selected as his assistants his two brothers, L. W. Boyden, formerly sales manager of bee supplies for the company at Medina, and R. W. Boyden, formerly purchasing agent for the home plant. In the meantime Mr. J. T. Calvert, who has successfully conducted the business in California, returns to Medina to take up his duties in connection with general administrative work, especially that relating to the branches and subsidiary companies. Both A. L. and L. W. Boyden have transferred their holdings from the Medina company to the California company, and will control the latter company and make their permanent homes at Los Angeles. The A. I. Root Company of Medina still retains a large interest in the California company. R. W. Boyden will become manager of the San Francisco branch of the California company, succeeding H. J. Bostwick, who recently resigned to accept the management of one of the largest health sanitariums in America. The A. I. Root Company of Medina, with A. I. Root continuing as president, E. R. Root as vice-president, H. H. Root as general manager, and J. T. Calvert as treasurer, will not change its personnel or organization except that the sales management of both bee supplies and Airline honey will come under the direct supervision of the general manager, H. H. Root.

OUR HOMES

A. I. ROOT

It is not good that man should be alone.—GEN. 2:18.

Therefore shall a man leave his father and his mother, and shall cleave unto his wife: and they shall be one flesh.—GEN. 2:24.

And God blessed them, and said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it.—GEN. 1:28.

Her price is far above rubies.—PROV. 31:10.

MAY the Lord be praised, that just now the mothers of our Nation (and I hope and pray, the mothers of the great wide world) are receiving more recognition than ever before since the world began. Somebody has said, "The hand that rocks the cradle is the hand that rules the world;" and I thank the Lord it seems to be coming true. I want to tell you now of one mother I have known very intimately for the past 65 years.

I was one of seven children, three older and three younger. When I was about 15 father moved back on to a farm in Medina County, that he had chopped out of the wilderness years before. In going to the country school there, a sister younger than I found a schoolgirl friend; and while I was off at school in Wellsville, on the Ohio River, she wrote me about this new schoolgirl friend. Let me explain here that I was a weakly child and usually played with the girls rather than the boys, because I couldn't stand the rough outdoor sports, and this younger sister was my particular friend and champion thru early life. She wrote that she had found the best girl for me for a wife, in the *whole wide world*. Little did I realize *then* the wonderful truth she was unconsciously telling. When I was about 17 I came home, and in due time met my sister Sara's girl friend, Susan Hall. She came across the water from "Merrie England" when 8 years old. There was a ruddy freshness on her smiling face that appealed to me from the very first; and, dear friends, I caught a glimpse of that wonderful charm on the dear face, as it lay cold in death but a few days ago.

I think Sara had told her what she had written me before I came; and so, of course, there were becoming blushes on that childish face when we first met.

It seemed to be, almost, "love at first sight," and I am afraid both of us came near forgetting for a time the dear friend and sister who brought us together.

But "Sue," even if she was only 15, had good sense enough to call a halt. She said something like this:

"Amos, my good father has worked hard for the means of sending me to the high school, and I am working hard to get an education. Your frequent visits are a serious interruption. Neither of us is old enough." I pleaded for an engagement, but she still said, "Wait until we are both older." (I have already told you in former Home papers about this.) I had been all this time experimenting with chemistry and electricity, and I decided I would go out in the world, and earn a reputation that even she would recognize. In due time handbills announced that "Prof. A. I. Root" (only 17, mind you) would deliver a lecture at a certain schoolhouse, on chemistry and electricity; admission, 10 cents; children and scholars, 5 cents. I was gone two or maybe three years, and came home fairly well dressed, and with a little money in my pocket. I think Sue was fairly well pleased with it all, except the word "Professor," when I had hardly a common school education. She was then 18, and I was 20. "Praise the Lord." from that time on, every move of my busy life was subject to her inspection and approval. While off on these trips I paid a jeweler $25.00 to give me instruction in the repair of clocks and watches. Of course this would amount to but little, had it not been for my skill acquired in constructing electrical apparatus. Altho there were two jewelers in Medina already doing a fair business, I started a third store, and in a few years I had the only jewelry store in town. The other two couldn't stand such opposition (in the way of zeal to please customers) as I gave. Before we were married that same devoted sister and her bosom friend came into my humble store and gave it a "house cleaning," and gave *me* some advice in regard to personal habits and neatness. When we were talking of marriage an aunt of Sue expressed a fear that I would never have "vitality enough to support a wife." I think it was meant kindly, and it really did us both good. I decided then and there we would *show* the good relative.* In due time I began to sell goods, as well as repair clocks and watches. I wanted a trademark to show cost, as well as selling price. A sentence is usually chosen containing 10 letters, no two alike. This was *my* trademark: "My own Susie." There are two letter s's, but one is a capital, and that makes it all right. No human being but myself knew my trademark. I think not even the dear sister I have mentioned who clerked for me. After marriage both wife and sister helped in the store. With *two* of God's precious jewels near by me for helpers, how could I ever have "gone wrong?" See last text.

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* Years after, when I not only supported a wife but gave work to a hundred or more, this good woman became a widow and supported herself for years by making bee veils for The A. I. Root Company.

While my "hobby" was electricity and mechanical work, Mrs. Root's was making a "home." Not only a neat, tidy, sanitary home, but a *godly* home. Before I recognized God's call, two children were born, a boy and a girl. Just as soon as they were fairly able to go to Sunday school, they were neatly attired and on hand. Well do I recall the Scripture text, repeated after the mother by "lisping tongues." Later, when the boy was old enough to go to day school, he came home using words he had never used before. When questioned by the careful (and prayerful) mother he said the boys at school all used such words. She gave him a careful talk, and next morning bid him good-bye outside the gate, with his promise to "report" when he came home. At night she was again "outside the gate," waiting his return. For some days his reports were not always all that she had desired and prayed for; but such careful work could *not* fail, and finally he welcomed his mother with an honest, manly, bright face, saying day after day "no more bad words." The rest of the five children were watched and trained in the same way. Altho she never had the opportunity, she insisted there should be no lack, on their part, in the way of finished scholarship. She not only visited the schools and kept in touch with their teachers, but went over their lessons with them when needed. When the older boy was about 15 he was so much interested in electricity and mechanics (like his father), he announced he wasn't going to school any more; he was going to be a machinist. Mother had planned sending him to Oberlin College. After considerable discussion, I think the young man for the first time in his life used the word "won't" to his mother. At this crisis, I was about to interfere but she waved me aside with "Father, this is my job. I can handle the young man without help."

He went to Oberlin (of course he did) and came home often with high honors, to report to the good mother, just as he did in childhood about the "bad words."

The three girls and the other boy had the *same* watchful care. The youngest daughter, Carrie Belle, while at High School, had trouble with her eyes. The best doctors agreed they must not be used to *read* for quite a period. Must her education come to a halt? The mother said not. She took Carrie's books, Latin, ancient history, and I don't know what else, and mastered the lessons so Carrie came off with high marks, without using *her* eyes at all. Did I too help? I will tell you how *I* helped. When Mrs. Root got so much interested in her "lessons," she had to tell me about it. When I was trying to sleep I would sometimes say, "Dear wife, I am afraid you will have to 'let up,' for I am so tired, I *must* get to sleep.

Today is Dec. 6. Mrs. Root was taken from this world, with scarcely a minute's warning, a week ago today. Oh, what would I give *now* for the privilege of listening to her dear voice once more, no matter what she might have to say! It has been the hardest blow of my life. I have prayed, while the blinding tears shut out vision, as I never prayed before; and, bless the Lord, I have learned lessons that nothing else could teach me. For a year past she has been telling us all she was not going to live long. Just the night before she died, we both woke up and had a long talk in regard to the matter of separation and that one of us must go first. She declared she was the one, and planned who should care for me in my old age. The next morning she insisted on getting up early and starting the washing. On page 780, December issue, I mentioned the work of the storm on our best room. I finally found a mason, and she was very much pleased to have the ceiling "made good." I suggested leaving the mopping of the floor until next day, but she told a neighbor after everybody got out of the way, after supper, *she* would mop it. I mention this to show she had her usual health and strength, and especially her zeal to have things tidy and neat, before retiring. Her helper went away about 5 o'clock, after scrubbing the floor and leaving the room in order. I got up from the supper table shortly after, to go up town on an errand. She finished her supper evidently and carried the dishes out to the kitchen table. When I came in, a few minutes later, with an armful of groceries, I found her at full length on the kitchen floor. Her face looked perfectly natural, and there was no evidence of any struggle for life, or of any pain. The doctor said she must have died instantly.

Just one more incident before closing this long Home Paper. Just a few days before her death, we had some discussion in regard to the way to prepare and cook roselle (the Florida cranberry). She objected to my way, and I got a little, say, "vehement." I left hurriedly and started out to my work Something (was it the Holy Spirit?) bid me go back and apologize; but I was still a little contrary, and said to myself it was only a *small* matter any way, and pushed on. But that "still small voice" whispered, "You may recall this later on." I dropped my tools, hastened back and said, "Sue, please forgive me for being rude and unkind and I will try to do better."

She put her arm around my neck and, resting her dear head on my shoulder, replied:

"And, oh, dear husband, forgive *me* for being so cross and unreasonable. I don't know what is the matter of me lately. I have cried and cried over the unkind way I have treated you, especially because you take it so meekly. Please forgive me, and I will try, oh so hard, to do better." She imagined she had been difficult to get along with. The truth was she was suffering from the malady that took her away, and I didn't know it. Suppose I had not heeded that gentle voice of conscience, and only recalled it after her sudden and unexpected death. I have had at least one experience along that line; and had I not made that apology, the sorrow and remorse would have doubtless followed me until the day of my death. Ye fathers and mothers, whose eyes rest on these pages, take warning ere it is too late.

> Blessed are the dead which die in the Lord from henceforth: Yea, saith the spirit, that they may rest from their labors; and their works do follow them.—Rev. 14:13.

ONE HUNDRED DOLLARS' WORTH OF HONEY FROM ONE COLONY IN ONE SUMMER.

Over $50.00 Worth of Honey from a Two-Pound Package of Bees.

Now perhaps you think I am going to say that the above was done here at Medina; but it was accomplished by a good friend of mine who lives at Jamestown in North Dakota. The two-pound package that did the big stunt did not come from Medina either. It came from our good friend Ault. He is the one who got out the new package, as you will notice by his advertisement, for shipping bees long distances. Perhaps you will wonder if I am not going to add that the honey came from the new Hubam clover; but I am compelled to say that it did not. See the letter below from our good friend Bennett:

> I put in about 45 acres of the white biennial sweet clover all within the city limits and within one-half mile of my home. In fact, my home and this field are both on the same quarter section of land. You will perhaps remember that my home property lies along the river for about a block and that Klaus Park skirts the other bank and that just beyond the park lies the field seeded to sweet clover; part in the valley, part on the hill.
>
> I have 40 swarms of bees now and they seem to be doing very well considering that part of them were shipped in, rather late, from Texas. Last year I had a colony that cast one swarm and the two produced 360 pounds of comb honey, and as I sold all the honey I wished to for from 40 to 50 cents a pound, it made a profit hard to beat. One two-pound package produced 160 pounds of comb honey, which is not bad. F. C. Bennett.
>
> Jamestown, N. D., June 13, 1921.

When I was out on that trip to see the electric windmills at Wyndmere, N. D., while visiting friend Williams, who has one of the mills, he gave me friend Bennett's address, and I called on him. May the Lord be praised for what has been accomplished, not only with sweet clover but in the way of making this land of ours a "land flowing with milk and honey." And you will notice we get milk and honey "all the same," even up as far north as the Dakotas and Canada, where they used to say, a few years ago, that it did not pay to keep bees because there was nothing for them to get honey from.

Prohibition Up To Date.

In the Sunday School Times of October 30, Miss Margaret Wintringer gives us one of the best world-wide temperance articles I have seen. If possible, get the Times and read it; then go back and read it again. I clip from it two paragraphs, as follows:

> PROHIBITION A WORLD EYE OPENER.
>
> Nearly forty years ago the children marched thru the streets of Chicago, singing "Saloons must go." I shall never forget that day, nor the face of Frances E. Willard, who wrote the words of the song, as she heard it sung. It was of one seeing a vision. She was seeing not the sneer on the faces of some of the unsympathetic spectators; *she* saw the promised land. Not long after, an Illinois liquor association demanded and secured the discharge of the man who had dared to teach the children of a big Illinois city to sing "Saloons Must Go," for a State W. C. T. U. Convention. The saloon was learning the menace of the children's song! Soon Luther Burbank, one of the nation's greatest scientists, vised the words of the children's song with the message, "Sooner or later, the saloon or the race must go."
>
> War Prohibition went into effect July 1, 1919. Its enactment saved the nation one hundred and eighty million dollars in money, and greatly lessened the difficulties of demobilization. Under war prohibition thousands of boys returned to their homes in safety.

Talks to Beginners. Continued from page 39

is to find out if they have enough honey to carry them thru the winter. By weighing the hive and contents, then substracting the weight of a hive filled with empty combs and allowing five to ten pounds for the weight of the bees and the pollen, the approximate amount of honey can be determined. If they have less than 20 pounds of honey at this time, they are in danger of starving before much nectar is available in the spring, and if they have only a few pounds they are in danger of starving at any time.

Feeding bees that are short of honey during the winter in cold climates is difficult, so it is important to see that each colony has enough before the arrival of cold weather in the fall. Beginners, who find colonies in danger of starvation in winter, can save them by laying a block of hard candy, made of granulated sugar, on top of the combs just over but touching the cluster of bees, then covering the hive snug and warm with an old blanket. Cubes of sugar can be fed in this way in winter.

Colonies should not be disturbed by feeding or any other way in winter, unless necessary. Colonies that have 10 to 15 pounds of honey should not be fed until later. They usually do not eat more than two or three pounds of honey per month during midwinter.

Classified Advertisements

Notices will be inserted in these classified columns for 50c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column, or we will not be responsible for errors. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISEMENTS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

R. Selwyn Wilson, I. J. Stringham, H. F. Williams, W. B. Crane, R. C. Wittman, Edw. A. Winkler, The Scott Apiaries, Howard Townsend, Walter C. Morris, O. H. Schmidt, E. D. Townsend, J. E. Harris, W. A. Hunter, Chas. Israel Bros. Co., Geo. E. Kramer, Wm. Galloway Co., Youth's Companion.

HONEY AND WAX FOR SALE

FOR SALE—Honey in 5 and 60 lb. cans. Van Wyngarden Bros., Hebron, Ind.

FOR SALE—Dark clover honey from the capping melter. J. F. Moore, Tiffin, Ohio.

FOR SALE—Buckwheat honey in 60-lb. cans. Bert Smith, Romulus, N. Y.

FOR SALE—Buckwheat honey in 5-lb., 10-lb., or 60-lb. cans. H. B. Gable, Romulus, N. Y.

FOR SALE—Two tons amber baking honey. F. W. Luebeck, R. D. No. 2, Knox, Ind.

BUCKWHEAT honey, two 60-lb. cans to case, for $10.80. J. G. Burtis, Marietta, N. Y.

FOR SALE—Clover, amber, and buckwheat honey. 60-lb. cans and 5 and 10-lb. pails. C. J. Baldridge, Kendaia, N. Y.

FOR SALE—Choice clover honey, 15c; buckwheat, 10c per pound. Two 60-lb. cans to case, f. o. b. here. Wm. Vollmer, Akron, N. Y.

CLA-FO-NY-QUALITY buckwheat honey (liquid or crystallized), 5-lb. pails, 65c each, 15 to case. Clarence Foote, Delanson, N. Y.

FOR SALE—A limited quantity of buckwheat honey (extracted). Single case lots, 10c. The Woodward Apiaries, Clarksville, N. Y.

FOR SALE—Buckwheat honey in 60-lb. cans, one can to case, liquefied, $6; 2 cans to case, granulated, $10.80. John J. Lewis, Lyons, N. Y.

FOR SALE—Spanish needle-heartsease honey, fine body and flavor. Write for price. State quantity wanted. F. W. Luebeck, Knox, R. D. No. 2, Ind.

FOR SALE—12,000 lbs. of choice white clover honey in 60-lb. cans at 15c per lb., f. o. b. Brooksville, Ky. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gal. barrels. Samples and price on request. A. I. Root Co., 23 Leonard St., New York City.

FOR SALE—Extra choice extracted white clover honey, put up in new 60-lb. cans and 5-lb. pails. Sample 20c, same to apply on first order. David Running, Filion, Mich.

EXTRA fancy well-ripened clover honey in new cans and cases. Per case, 120 lbs. net, $15.50. Sample 20c. Edw. A. Winkler, R. D. No. 1, Joliet. Ills.

FOR SALE—Clover, basswood or buckwheat honey, comb and extracted, by the case, ton, or carload. Let me supply your wants with this fine N. Y. State honey. C. B. Howard, Geneva, N. Y.

FOR SALE—A very good grade of buckwheat comb honey. Will average 22 lbs. to the case of 24 sections. Only 140 cases left. $4.25 per case f. o. b. here. Edgar Williams, Pierpont, Ohio.

"THE OLD KY." clover honey; white, well-ripened, rich and thick; 60-lb. cans, 14c f. o. b. here; 10-lb. pails, $2.00, delivered to third zone. Sample 20c. Adam Kalb, Brooksville, Ky.

FOR SALE—Extracted honey, clover, 15c per pound; amber, 10c; two 60-lb. cans to case; amber in barrels, 8c; in five-case or five-barrel lots, 5% off; in ten-case or ten-barrel lots, 10% off. H. G Quirin, Bellevue, Ohio.

HONEY FOR SALE—In 60-lb. tins, water-white orange, 14c; water-white clover or white sage, 13c; extra L. A. sage, 11c; N. Y. State buckwheat 10c, for immediate shipment from New York. Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE—7000 lbs. fine quality white sweet clover honey, put up in good clean second-hand cans. It is well ripened and rich, and the price as long as it lasts is 12c per lb. in 60-lb. cans, two cans to the case. Try it. Joe C. Weaver, Cochrane, Ala.

FOR SALE—About 30 cases light golden honey. Mostly clover. Single case (120 lbs.), 12c per lb., 2 or more cases, 11½c per lb., 5 or more cases, 11c per lb., 10 cases at 10½c per lb. This honey is in new 60-lb. cans. All prices f. o. b. Merritt. J. H. Corwin, Merritt, Mich.

RASPBERRY HONEY—Blended with a slight amount of willow-herb honey, two of the best honeys of northern Michigan. It was all thoroly ripened by the bees. It is good thick body, and fine flavor, none better for table use. It is put up for sale in 60-lb. tin cans. Price for two cans in a case, $18.00; for one can in a case, $9.50. Sample by mail, 20c, which may be applied on purchase of honey. Elmer Hutchinson & Son, Lake City, Mich.

HONEY AND WAX WANTED.

WANTED—Extracted clover honey. L. K. Hostetter, Lancaster, R. D. No. 5, Pa.

WANTED—Honey, section, bulk comb and extracted. Elton Warner, Asheville, N. C.

BEESWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.)
Superior Honey Co., Ogden, Utah.

I AM in the market for white clover, basswood, or amber honey. Send sample and quote me your lowest prices delivered f. o. b. Preston. M. V. Facey, Preston, Minn.

WANTED—To buy best quality white honey in 5-lb. pails and 60-lb. cans. Also No. 1 quality buckwheat. Quote best price in first letter. L. S. Griggs, 711 Avon St., Flint, Mich.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, O.

WANTED—Beeswax. We are paying 1 and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address, so we can identify it immediately upon arrival, and make prompt remittance. The A. I. Root Co., Medina, Ohio.

FOR SALE.

ROOT'S GOODS AT ROOT'S PRICES. A. W. Yates, Hartford, Conn.

FOR SALE—10-frame hive-bodies in flat. C. H. Hodgkin, Rochester, Ohio.

BEEHIVES made to order, $2.50. Order now. E. E. Salge, Skidmore, Texas.

HONEY LABELS—New designs. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE—A full line of Root's goods at Root's prices. A. L. Healy, Mayaguez, Porto Rico.

YOU will make no mistake in ordering your comb foundation of E. S. Robinson, Mayville, N. Y.

CYPRESS beehives, supplies and genuine Hubam clover seed for sale. J. Tom White, Dublin, Ga.

PORTER BEE-ESCAPES save honey, time and money. Great labor-savers. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

FOR SALE — "SUPERIOR" FOUNDATION, "quality unexcelled." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

FOR SALE—39 Cary bodies, empty, with bottom-boards, covers and inner covers, at $1.00 each. Ancel F. Marble, Center Cambridge, N. Y.

ROOT'S BEE SUPPLIES—For the Central Southwest beekeepers. Beeswax wanted. Free catalog. Stiles Bee Supply Co., Stillwater, Okla.

FOR SALE—One No. 15 and one No. 17 Root two-frame automatic extractors. Want a power machine. Also a section fixer. Ed. Mrovka, Collinsville, Ills.

FOR SALE—Pure Louisiana sugar cane syrup in ten-lb. can at 80c per can f. o. b. Bordelonville, La. Samples free. A. M. & L. S. Firment, Moreauville, La., R. F. D. No. 1.

FOR SALE—Good second-hand 60-lb. cans, two cans to a case, boxed, at 60c per case f. o. b., Cincinnati. Terms cash. C. H. W. Weber & Co., 2163 Central Ave., Cincinnati, Ohio.

GUMMED labels of all sorts—as low as 60c per 1000—from your own copy. We also print for beekeepers at about half prices usually charged. Will open account and let payment be made on receipt of goods. Roessler, Roseville, N. J.

SWEET CLOVER hullers and scarifiers combined, hulls and scarifies at the same time. Two screens included. If not satisfied your money returned. Price, $3.50 each, postage extra. S. Rouse, Ludlow, R. D. No. 2, Ky.

WANTS AND EXCHANGES.

ROYAL typewriter, $65.00. Will trade for honey, queens or offer. E. A. Harris, Albany, Ala.

SOME old, rare or valuable books for sale, or exchange for honey, etc. G. R. Lumsden, Norwich, Conn.

I WILL give packages of bees for a good bird or quail dog, about a year old, and dog must be trained. I would prefer a bitch, and must have the dog on trial. Can furnish best of references. E. J. Beridon, Jr., Mansura, La.

FOR SALE OR TRADE FOR BEE SUPPLIES—One three-horse three-phase 60-cycle, 220-volt motor, good as new, with GE push and pull switch. One 4-frame Root automatic reversible power honey extractor, used three days, good as new. 400 Root chaff division boards, nailed up. Never used. Fred A. Robinson, Nampa, Box 322, Idaho.

WANTED—A two-frame reversible extractor. State price. Dr. T. E. Griffiths, Mogadore, Ohio.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

WANTED—50 to 100 colonies of bees. Box or frame hives. 100 lbs. medium brood foundation. Charles Schilke, Matawan, R. D. No. 2, N. J.

EXPERIENCED beekeeper wants to keep bees on shares. For particulars, write W. R. Revel, Vernon, Box 561, Texas.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa, Council Bluffs, Iowa.

FOR SALE—Bee supplies, bee books, bee papers, cheap, or would exchange for good incubator or pure-bred white Leghorn chickens. J. O. Garman, Glasgow, R. D. No. 4, Ky.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

WANTED—10-frame standard hives and equipment, empty combs (wired) and bees (nearby). To interest must be warranted disease-free, good condition and priced right. L. W. Smith, Madison, N. J. (or 56 William St., New York City).

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1922 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Son, Hamilton, Illinois.

WANTED—To exchange a two-gang "or four-horse" riding breaking plow good as new. Everything complete with new points. "Emerson make." Will take in exchange Italian bees, nuclei with queens or supplies. Bees to be delivered in spring. Would like to buy small place near Mennonite Church suitable for apiary. What have you? J. C. Provins, Centerburg, Ohio.

SEEDS AND PLANTS.

"We will not guarantee the purity of any seed advertised nor any nursery stock, as nurserymen ordinarily will not do this themselves; but any seedsman or nurseryman advertising in our columns will have given us excellent references in advance, and our readers may consider this fact in their favor."—From Our Guarantee and Advertising Conditions.

HUBAM seed, northern grown, scarified, oz. 20c; 8 oz., $1.00. M. R. Thompson, Malung, Minn.

PURE Hubam or white annual sweet clover seed, oz., 25c; lb., $2.00. L. B. Harber, Rt. 1, Mt. Olivet, Ky.

GUARANTEED NORTHERN-GROWN HUBAM—Scarified and recleaned seed, $2.00 a pound. Reduction on quantities. Blair Brothers, Ames, R. D. No. 4, Iowa.

HUBAM We are the Bam (balm) for high prices. Sell Ames, Iowa, strain, obtained from Henry Field Seed Co. Pure, unmixed, 1 lb., $1.45; 10, $13.50, delivered, prepaid. Chas. B. Phelps, Shawnee, Okla.

FOR SALE—Rocky Mountain bee plant seeds. Wonderful honey plant, also fine chicken feed, nice flowers. Best colony gathered over 200 lbs. of honey from it. Price $1.00 per pound, postpaid. S. M. Campbell, Flagstaff, Box No. 142, Ariz.

HUBAM—The annual white blossom sweet clover. Guaranteed genuine Hughes strain, produced under cultivation. Cleaned and scarified seed. Cultures for inoculating will be furnished at cost. 14,500 seeds, 25c; lb. $2.00. Lloyd A. Sheffield, East Lansing, Mich.

"GLEANINGS" has copy of certificate, Henry Field Seed Co., by Henry Field, Pres., attesting my purchase of seed, Feb. 10, 1920, and Jan. 11, 1921. No other sweet clover grown near ours. References gladly furnished. Note our delivered prices. 1 lb., $1.45; 10, $13.50. Chas. B. Phelps, Shawnee, Okla.

"I, the undersigned, do solemnly swear, that Hubam clover seed, sold by us, was cultivated in rows, hulled and recleaned under my personal supervision with our own machinery; that we obtained our original seed from Henry Field Seed Co. at $8.00 per pound; and that our seed is pure and unmixed from any source and true to name.—Chas. B. Phelps." Affidavit with each shipment. No weed seeds, none moldy, none better at any price. 1 lb., $1.45; 10 lbs., $13.50 delivered. Chas. B. Phelps, Shawnee, Okla.

BEES AND QUEENS.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

TRY ACHORD'S BEES and QUEENS. Price list by return mail. W. D. Achord, Fitzpatrick, Ala.

QUEENS—Look for my classified advertisement in February Gleanings. G. H. Merrill, Greenville, R. D. No. 5, S. C.

FOR SALE—Carload bees, nuclei, pound packages, full colonies. See our ad elsewhere. The Stover Apiaries, Mayhew, Miss.

PHELPS GOLDEN QUEENS will please you. Mated, $2.00; 6, $10.00; or $18.00 a doz. C. W. Phelps & Son, Binghamton, N. Y.

DON'T forget, a card will bring our descriptive circular and price list of our Italian queens, drones and bees. R. V. Stearns, Brady, Texas.

BEES AND QUEENS from my Carolina apiaries—progeny of my famous Porto Rican pedigreed breeding stock. Elton Warner, Asheville, N. C.

A POSTAL will bring you my 1922 descriptive booklet and price list. Booking orders now. Write J. B. Hollopeter, Queenbreeder, Rockton, Pa.

QUEENS AND BEES—High grade, day old and untested in Thompson safety cages. 2-lb. packages. Circular ready. James McKee, Riverside, Calif.

FOR SALE—150 colonies bees in standard 10-frame hives. Located in best sweet clover section of Alabama. J. J. Bennett, Crystal Springs, Miss.

WE are booking orders now for colonies and packages of Italian bees. Satisfaction guaranteed. Write for prices. Van Wyngarden Bros., Hebron, Ind.

WE are now booking orders for spring delivery of our queens and package bees. Write us your wants and ask for prices. Graydon Bros., Greenville, R. D. No. 4, Alabama.

QUEENS OF QUALITY for 1922. Three-banded Italians only. After April 15, untested, $1.25; tested, $2.00. Satisfaction guaranteed. P. M. Williams, Ft. Deposit, Ala.

FOR SALE—500 colonies in 4 yards, with power extractor, easy terms, near English colony. Very healthful, wonderful flows, local market. M. C. Engle, Herradura, Cuba.

FOR SALE—Package bees for spring delivery, three-banded strain, bred for business, 20% cash books your order. Safe arrival and satisfaction guaranteed. A two-pound package of bees and select untested queen for $5.00; 25 or more for $4.75 each. Write for prices on larger lots. Caney Valley Apiaries, J. D. Yancey, Mgr., Bay City, Texas.

FOR SALE—Early package bees, nuclei and queens. We handle 1800 colonies. Shipping season March 1 to June 1. Loveitt Honey Co., Phoenix Ariz.

BEES BY THE POUND — Also QUEENS. Booking orders now. FREE circulars giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas, E. B. Ault, Prop.

FOR SALE—Two-pound packages three-banded Italian bees with queens, $5.25 each; 10 or more, $5.00 each. One-fourth down books order. Satisfaction is my guarantee. J. J. Scott, Crowville, La.

FOR SALE—Golden Italian queens ready May 1. 1 queen, $1.25; 6, $6.50; 12, $12.00; 100, $85.00. Virgins, 50c each. Write for prices of nuclei. W. W. Talley, Greenville, R. D. No. 4, Ala.

FOR SALE—3000 pounds of bees for spring delivery at pre-war prices. Rosedale Apiaries, Big Bend, La., J. B. Marshall and H. P. LeBlanc, Props.

MY 1922 queens for sale. The Big Yellow kind, none better. Satisfaction guaranteed or money back. Price, $1.00 each, or $80.00 per 100. E. F. Day, Honoraville, Ala.

COLORADO HEADQUARTERS for QUEENS—Northern-bred leather-colored three-band Italians. Safe arrival guaranteed. Booking orders now for June 1st delivery. Send for circular and price list. Loveland Honey & Mercantile Co., Loveland, Colo.

THREE-BAND packages, bees, queens, and nuclei, April and May delivery. Special orders solicited. Write for prices and terms. Safe arrival and satisfaction guaranteed. Tupelo Honey Co., Columbia, Ala.

ORDERS booked now for spring delivery, 3-frame nucleus and queen, $6.50; select tested, $7.50. Dr. Miller's strain. No pound packages. Low express rates and quick transit north. 10% with order. S. G. Crocker, Jr., Roland Park, Baltimore, Md.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, $1.00 each; $10.00 per dozen; $75 per 100. Pure mating, safe arrival and satisfaction guaranteed.

FOR SALE—10 colonies of bees in Buckeye double-walled hives. Cowan two-frame extractor and 10 extracting supers and combs, excluders and complete outfit in excellent condition. H. Schwering, 1533 S. 16th St., Philadelphia, Pa.

FOR SALE—275 colonies of bees, mostly in 10-frame hives, combs built on full sheets, wired and brace-wired. Young Italian queens, 1 Root eight-frame power extractor and engine, 2 tanks and capping melter. Fine leased location, orange, sage and wild buckwheat within easy reach. L. J. Ray, 271 E. 8th St., Claremont, Calif.

WE are now equipped to handle your early spring orders for package bees, and Italian queens, especially bred for the production of honey. Prices will be in accord with the reduction in material and labor. Safe arrival guaranteed. Write for prices and terms. Sarasota Bee Co., Sarasota, Fla.

QUEENS, package bees and nuclei. Booking orders now for 1922. Shipping begins March 15. Our early queens ready for northern queenless colonies at unpacking time. One untested, $1.50; one select untested, $1.70. Circular free of our pedigreed strain on request. Dr. White Bee Company, Sandia, Texas.

CALIFORNIA ITALIAN QUEENS, the old reliable three-banded stock that delivers the goods. Every queen actually LAYING before being caged, and fully guaranteed. I also guarantee safe arrival. SPECIAL FALL PRICES, select untested, 1, $1.25; 6, $7.00; 12, $13.00; 25 to 99, $1.00 each; 100 and over, 90c each. Package bees for next spring delivery. Circular free. California Apiaries, J. E. Wing, Prop., 155 Schiele Ave., San Jose, Calif.

BOOKING orders for spring delivery. Queens, package bees, and nuclei. The reliable A. I. Root strain. Golden and leather-colored Italians. Virgins, 60c; untested, $1.50; select untested, $2.00; tested, $2.50; select tested, $3.00. Circular free. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR SALE—Three-banded Italian bees and queens. 2-lb. package with queen, $4.75; without queen, $3.75. Queens, $1.00 each, $11.00 per dozen; 25 per cent cash books order; safe arrival and satisfaction guaranteed in U. S. and Canada. We ship nothing but the best. W. C. Smith & Co., Calhoun, Ala.

EARLY SPRING delivery, 1922. Three-banded stock only. One Hoffman frame emerging brood, one good untested queen, one pound bees, April delivery, $5.25 each package. Same as above. May delivery, $4.75. 5 per cent discount on 25 packages or more; 10 per cent deposit to book your order. L. C. Mayeux, Hamburg, La.

I EXPECT to be ready to start shipping 3-lb. packages of bees with 1-frame brood and bees, 1 untested queen, at $6.00; 2-frame with untested queen, $4.50, about April 15. Young tested queen, 50c extra, or $1.50 each. I think I was the second to ship packages of bees from this state and know how to serve customers. F. M. Morgan, Hamburg, La.

LARGE, HARDY, PROLIFIC QUEENS. Three-band Italians and Goldens. Pure mating and safe arrival guaranteed. We ship only queens that are topnotchers in size, prolificness and color. After June 1: untested queens, $1.50 each; 6 for $8.00; 12 or more, $1.40 each; 25 or more, $1.25 each. Tested queens, $3.00 each; 6 for $16.00. Buckeye Bee Co., Zoarville, Ohio.

WE know our queens are much better than all the rest. By actual test side by side, all workers look just alike. Three bands only. If they show the slightest trace of four bands, fire them back to us, for that shows very poor breeding indeed. Pure bred Italian bees only show three bands. Untested, $1.00; select untested, $1.25; tested, $2.00; select tested, $3.00. F. M. Russell, Roxbury, Ohio.

CONNECTICUT queens. Highest grade 3-banded Italians ready June 1. Select untested, $1.25 each; 6, $6.50; 12, $12.00; 50, $47.50; 100, $90. Two lbs. bees with queen, $5.00; 3lbs. with queen, $7.00. Two-frame nuclei with queen, $5.50; 3-frame with queen, $7.50. Select virgin queens (not culls), 50c each, $45.00 per 100. No disease and satisfaction guaranteed. A. E. Crandall, Berlin, Conn.

PACKAGE BEES, delivery April 15 to May 15, 1922. Three-banded Italians, no disease, safe arrival and satisfaction guaranteed. Inspection certificate with each package. 2-lb. pkg. bees with select untested queen, $6.50; 3-lb. pkg. bees with select untested queen, $8.50. 10% discount on orders of 25 or more packages; 25% books your order. Reference: A. I. Root Co., New Orleans, La.; R. S. Knight, 4927 Conti St., New Orleans, La.

FOR MAY AND JUNE DELIVERY—Place your order for our high-grade three-banded Italian bees and queens now. Take advantage of early order discounts by ordering now. We guarantee to please you. Prompt service and quality stock is our motto. We want your orders for bees on Root standard Hoffman frames, emerging bees. Pound packages and nuclei, with or without queens. Write for our prices and valuable information. Oscar Mayeux, Hamburg, La.

FOR SALE—1922 bees. Mr. Beeman, send your order early. First arrived, first served. Make shipment April 25 to June 5. Several years' experience. 2-lb. package three-banded Italian bees, 1 untested queen, $5.50. 1st. We use pure sugar syrup; better than honey or candy to ship on; it contains water as well as feed. 2nd. Feeders are made more substantial, ⅓ larger and have screw cap that will not jar out. One-third down and balance just before shipment. Guarantee safe arrival all-over U. S. and Canada. A. J. Lemoine, Moreauville, La.

BURLESON ITALIAN BEES AND QUEENS—In 2 and 3 lb. packages; 1 2-lb. package with select untested queen, $5.00; 25 or more, $4.50; 1 3-lb. package with select untested Italian queen, $6.25; 25 or more, $5.75. Ten per cent with order, balance 10 days before shipment; 1000 colonies to draw from. Can deliver the goods on time. Safe arrival and satisfaction guaranteed. T. W. Burleson, Waxahachie, Texas.

THREE pounds of bees, a Hoffman frame of brood and honey, and an untested Italian queen for $6.50. Discount allowed on large order. I guarantee satisfaction, safe arrival and free from any kind of disease. I will replace any package that arrives in bad order, or shortage, if given a receipt from the express company to that effect. 25% books your order for April and May delivery. E. J. Beridon, Jr., Mansura, La.

FOR SALE—Italian bees shipped with comb after April 15. With young queen, 2 lbs. at $5.75 each; 3 lbs. at $7.25 each. Nuclei, wired combs filled with brood, same prices respectively as pound packages. Queens, May and June prices, untested, $1.50; 12, $1.25 each: tested, $2.25; 6, $2.00. Discount on large orders. Certificate of inspection with shipment. Safe arrival and satisfaction guaranteed. 25% books your order. J. L. St. Romain, Hamburg, La.

FOR MAY DELIVERY, 1922—One vigorous Italian queen, one frame emerging brood, one pound bees. Price, complete, f. o. b. Bordelonville, $5.00. Additional frames of brood, each $1.00; additional pound of bees, each $1.00. Queen introduced and laying enroute to you. Safe delivery and satisfaction guaranteed. No disease. Reference given. Orders booked one-fifth down. May delivery. Send for addresses of satisfied customers. Jes Dalton, Bordelonville, La.

NEW 1922 PRICES—On account of the present price of honey and recent reduction in the price of supplies we are now booking orders for our three-band leather-colored Italians at the following low prices: 2-lb. packages of bees, no queen, $4.00; untested queen, $1.25; 12, $13.50. Select untested, $1.50; 12, $15.00; tested, $2.25; 12, $20.00. No disease. Safe arrival in U. S. and Canada and satisfaction guaranteed. Write for circular and prices on quantities. J. M. Cutts & Son, R. D. No. 1, Montgomery, Ala.

LOW PRICES—High quality stock for 1922. 2-frame nuclei and untested Italian queen, $5.00 each; 25 or more, $4.75 each. 3-frame nuclei and untested Italian queen, $6.50 each; 25 or more, $6.25 each. If tested queens are wanted, add 50c per nucleus. All prices f. o. b., Macon, Miss. No disease has ever been in our yards. Will replace any loss or refund money, on purchaser sending us bad order receipt from express agent. Terms: 10% of amount with order, balance just before shipment is made. Order early and get your bees when you want them. Hummer Bees, Queens and Service will give satisfaction. No queens except with nuclei. Geo. A. Hummer & Sons, Prairie Point, Miss.

BEES AND QUEENS—Vigorous leather-colored Italian queens, famous three-banded stock, also bees in packages. Two-pound package with queen, $6.00; three-pound package with queen, $7.25. If you wish a purely-mated queen in a package, add $1.00. Three-frame nucleus with queen, same price as a three-pound combless package with queen. 90% of queens I sell are purely mated. These queens are from select breeding queens from recently imported stock, and every queen is young and laying, when taken from hive for shipment. These queens, from highly-bred stock, cannot be surpassed. I consider my queens a credit to the beekeeping world. Deposit of 25% required with order, balance payable just prior to shipment. My bees are healthy. Unsolicited testimonials vouch for satisfaction given in past seasons. Shipments begin about April 20 or first days of May, depending upon weather and season conditions. If bees do not arrive safely, I shall replace them or refund money. C. M. Elfer, St. Rose, La.

MISCELLANEOUS.

FOR SALE—Pure Saanen bucks, grade doe kids, Nubian doe, pure doe kids. G. White, Hillman, Mich.

CALIFORNIA wonder Corn for seed. Greatest producers wherever grown. Shelled Spanish peanuts. Save retail profits. James McKee, Riverside, Calif.

MEDICINAL roots and herbs are very profitable to grow. We especially recommend growing Golden Seal, which with good care will yield as high as $10,000 per acre for each crop. It takes several years to mature but will average $1000 a year. Special Crops, a monthly paper, tells how. Sample copy, 10c; $1.00 per year. Address Special Crops Pub. Co., Box "G," Skaneateles, N. Y.

HELP WANTED.

WANTED—Man with general experience for commercial apiaries. Exceptional opportunity, state qualifications and wages wanted. The Woodward Apiaries, Clarksville, N. Y.

WANTED—One experienced queen-breeder for season of 1922. Give age, experience and reference in first letter, also wages desired. N. Forehand, Ramer, Ala.

I WISH a young man to learn the bee business. Start March 1, 1922. 400 colonies, and a big queen business. A fine chance for the right youngster. Allen Latham, Norwichtown, Conn.

EXPERIENCE AND FAIR WAGES given to active young man willing to work, for help in well-equipped beekeeping business of 600 colonies. Season April to November. State occupation, weight, height, age and experience. The Pettit Apiaries, Georgetown, Ont., Can.

SITUATIONS WANTED

WANTED—By married man, position with bees or poultry. Have 12 years' experience with bees. State wages and conditions. Emil Anderson, Box No. 216, Anita, Pa.

1922 ITALIAN QUEENS

Untested, $1.20 each, 12 or more, $1.00 each. Select Untested, $1.50. Tested, $2.00. No disease.

Package Bees Priced on Request.
D. W. HOWELL
Shellman, Ga., Box A3.

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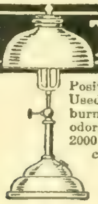

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Half-a-hundred trains—freight, express, and mail—besides boats and motor-trucks, at the beeman's service every day.

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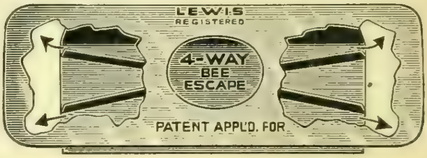

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Sold only by Lewis "Beeware" Distributors.

Southland Queens

3-banded leather-colored Italians. Packages and nuclei a specialty. **Special Prices** to Associations or Beekeepers on large orders. Write for circular. Mating guaranteed. Safe arrival guaranteed. Replacements made at once. Special attention given **foreign** shipments. Delivery April 15th or sooner.

Terms: 25% down, balance before shipping.

THE SOUTHLAND APIARIES
Box 585 Hattiesburg, Miss.

CANDY FOR WINTER FEED

In winter bees sometimes starve with plenty of honey in the hive. Use candy and avoid this unnecessary loss. Put up in large paper plates weighing two pounds each. Write for price, also catalog of Bee Supplies.

H. H. JEPSON
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Hill's Hardy Tested Sorts

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Box 246 Evergreen Specialists

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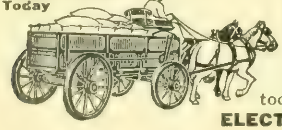
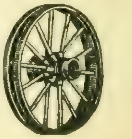


FARM WAGONS



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Hubam Clover Certified Seed, $2.00 per lb.

THE SOUTHLAND APIARIES

Box 585 Hattiesburg, Miss.

Established 1885.

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The Kind You Want and the Kind That Bees Need

We have a good assortment in stock of bee supplies that are mostly needed in every apiary. The A. I. Root Co.'s brand. Let us hear from you; information given to all inquiries. Beeswax wanted for supplies or cash.

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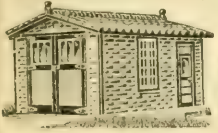

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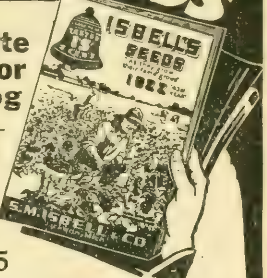
ROSES *of New Castle*

Are the hardiest, sturdiest, freest blooming rose plants in America. Grown on their own roots in the fertile soil of New Castle. We give you the benefit of a lifetime experience and the most select list in America. Every desirable Rose now cultivated in America is included in our immense stock—and the prices are right.

Our rose book for 1922 ROSES OF NEW CASTLE tells you how to make rose growing a success. Published and elaborately printed in actual colors. Send for your copy today—a postal will do. Address HELLER BROS. CO., Box 118, NEW CASTLE, IND.

Sow Seeds of Success

Write Today For This Catalog



Some vegetable gardens pay their owners $100 in returns for every $5 spent. They are a constant source of big profit. They yield the finest vegetables and yield lots of them, because they are planted with—

Isbell's Seeds

"As They Grow Their Fame Grows"

TRADE MARK

Isbell's Gardens Pay—for the same reason that pure-bred cattle produce thoroughbred off-spring. Every ounce of Isbell Seed is tested. Isbell Seeds are Michigan grown; earliness, hardiness and sterling qualities are bred into them. Isbell's 1922 book on seeds and gardening tells what and how to plant and what to expect from the crop. It's one of the most authoritative catalogs in America. Ask for your copy. Mail coupon.

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674 Mechanic St. Jackson, Mich. (25)

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Gentlemen:—

Without obligation, send me your 1922 Catalog of Isbell's Seeds.

Name—

Address

PATENTS Practice in Patent Office and Court. Patent Counsel of The A. I. Root Co.

Chas. J. Williamson, McLachlan Building,
WASHINGTON, D. C,

Trees - Plants - Seeds

Everything for the fruit grower, farmer or suburban home. Highest grade stock, low, direct-from-grower prices. You can be sure when you buy from us that stock is healthy, sturdy and ready to produce maximum results in fruit or flower.

Our extensive line of ornamental shrubs, bushes and perennials includes the worth-while varieties for beautifying the home grounds, a splendid stock for commercial growers or home use. Seeds for the vegetable or flower garden.

Our 1922 catalog, a mine of planting information, is free.

We have the exclusive sale of the Ohio Beauty Apple.

WOODLAWN NURSERIES
882 Garson Ave.
Rochester, N. Y.

BEES AND QUEENS for 1922

5 PER CENT DISCOUNT FOR ORDERS RECEIVED IN JANUARY.

One 1-frame nucleus with untested queen, $4.00; one 2-frame nucleus with untested queen, $5.00; untested queens, $1.25 each; 12, $1.10 each; tested queens, $1.60 each; 12 or more, $1.35 each; select tested queens, $2.00 each. Breeders, $5.00 at all times. Satisfaction and safe arrival guaranteed.

H. L. MURRY - SOSO, MISSISSIPI

INDIANOLA APIARY

is now booking orders for 1922 for Italian bees and queens. Write for price list and circular. No disease. Bees inspected by State inspector.

J. W. SHERMAN
Valdosta, Ga.

"Best" Hand Lantern

A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. **Agents wanted. Big Profits. Write for Catalog.** **THE BEST LIGHT CO.**
306 E. 5th St., Canton, O.

CLOVER

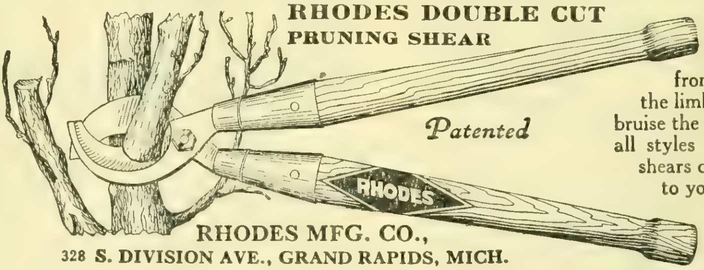
Adapted to Climate and Soil

Isbell's Bell Brand Clovers—red or alsike—are the purest obtainable. They are all Northern-Grown—hardiness and adaptability to severe climatic conditions are bred into them—the result of 43 years of success in growing seeds.

FREE Samples of any field seeds to show quality sent on request with Isbell's 1922 Seed Annual. Big savings on sterling quality direct-from-grower seeds. Write today.

S. M. ISBELL & COMPANY
675 Mechanic St. (28) **Jackson, Mich.**

RHODES DOUBLE CUT
PRUNING SHEAR



Patented

THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door. Write for circular and prices.

RHODES MFG. CO.,
328 S. DIVISION AVE., GRAND RAPIDS, MICH.

QUEENS BEES BY THE POUND FOR 1922 QUEENS

You who have tried our bees and queens know their good qualities. Those who have not tested them we suggest their giving us a trial order. Our thousands of satisfied customers testify to their superior traits. We are now booking orders for 1922 delivery, 10 per cent cash with order. No disease, safe arrival and satisfaction guaranteed.

PACKAGES BY EXPRESS

1-lb. packages, with queens $4.00 each; 12 or more, $3.75 each. 2-lb. packages, with queens, $5.50 each; 12 or more $5.00 each. 3-lb. packages, with queens, $7.25 each; 12 or more, $6.75 each.

By parcel post 10 per cent extra on above.
1½-lb. package, Canadian special, with queens, by mail, $5.00 each.
Select untested queens, $1.50 each; 12 or more, $1.40 each
Select tested queens, $3.00 each; 12 or more, $2.75 each.

We do not guarantee safe arrival of bees going to Canada by express. The largest sized packages we can ship by mail to Canada are the 1½-lb. size, as per above.

M. C. BERRY & CO., HAYNEVILLE, ALA., U. S. A.

QUEENS

that spell s-a-t-i-s-f-a-c-t-i-o-n, at prices pronounced r-e-a-s-o-n-a-b-l-e, our aim and achievement.

Prices of Queens for 1922.

	1	6	12
Untested	$1.50	$8.00	$14.00
Select Untested....	1.75	9.00	16.00
Select Tested	3.00	16.00	30.00

HARDIN S. FOSTER

Dept. G. **Columbia, Tenn.**

QUEENS

Three-banded Italian Queens that must please. Pure mating and satisfaction gurteed. We do not claim to have the best, but do claim them to be as good. Untested Queens, $1.25 each. Twelve or more, $1.10 each. Tested Queens, $1.60 each. Twelve or more, $1.40 each.

CYPRESS BEE SUPPLIES

Hives, hive-bodies, bottom-boards, covers, frames, foundation, etc. Write for prices. All queens shipped from Crawford, Miss., all supplies shipped from Coker, Ala.

The Abston Apiaries

Crawford, Miss. **Coker, Ala.**

Bees and Queens

Mr. Beekeeper, if you want good quality, quick service, prompt attention, and perfect satisfaction, try **Norman Bros.** pure three-banded Italian bees and queens. And see for yourself. We are going out to please our customers and to build up our business, and we know it will take honest dealing to do it. And we are going to send out just what we are advertising. Our bees are disease-resisting and are pure three-band Italians.

Orders booked with one-fourth down, balance ten days before shipment is desired. We ship only 2-lb. packages by express F. O. B. shipping point. $4.20 each; 12 or more, $4.00 each. Add prices of queens wanted. We guarantee pure mating, free from all diseases and safe arrival in U. S. A. and Canada.

Prices April and May.

	1	6	12	100
Untested Queens.	$1.25	$6.50	$12.50	$90.00
Select Untested.	1.35	7.00	13.20	100.00
Tested Queens...	2.00	11.00	21.00	
Select Tested....	2.50 each			

NORMAN BROS. APIARIES

NAFTEL, ALA.

Completely Destroys the Weed Growth

More than that, the BARKER breaks the hardest crust into a level, porous, moisture-retaining mulch — **all in the same operation.**

A ten-year-old boy can run it—do more and better work than ten men with hoes. Saves time and labor, the two big expense items.

BARKER WEEDER, MULCHER AND CULTIVATOR

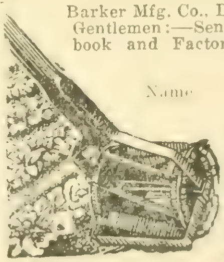
Eight reel blades revolve against a stationary underground knife—like a lawn mower. **BEST WEED KILLER EVER USED.** Works right up to plants. Cuts runners. Aerates the soil. Has leaf guards, and shovels, for deeper cultivation—3 *garden tools in* 1.

FREE ILLUSTRATED BOOK.

Tells how gardeners and fruit-growers everywhere are reducing their work; increasing their yields.—How to bring growing plants through a dry season.—How to conserve the moisture and force a larger, more rapid growth. Send TODAY for this free, illustrated book and special Factory-to-User offer.

BARKER MANUFACTURING CO.

Dept. 23. **David City, Neb.**



Barker Mfg. Co., Dept. 23, David City, Neb.
Gentlemen:—Send me postpaid your free book and Factory-to-User offer.

Name ....

Town ....

State ....

R. F. D. or Box ....

Shrubs and Trees

That provide Nectar for the Bees and Fruit for the household. No Cash with order. Get our Catalog TODAY.

PROGRESS NURSERIES
1317 Peters Ave. Troy, Ohio

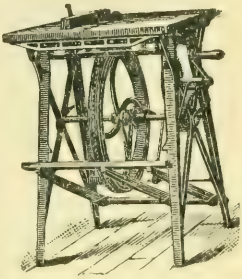
BARNES' HAND & FOOT POWER MACHINERY

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial

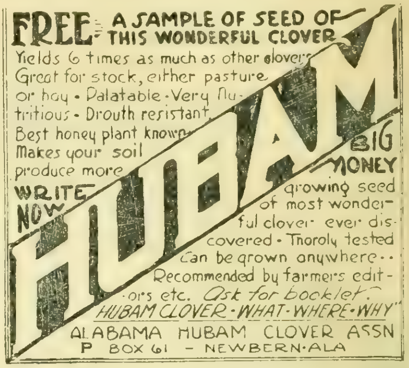
Send for illustrated catalog and prices.

W. F. & JOHN BARNES CO.
545 Ruby Street
ROCKFORD, ILLINOIS



HUGHES HUBAM ALABAMA

Grown where it originated, under direct supervision of H. D. Hughes, the original discoverer and distributor. Genuine. Uniform types. Early or late. Use discretion.



FREE A SAMPLE OF SEED OF THIS WONDERFUL CLOVER

Yields 6 times as much as other clovers
Great for stock, either pasture or hay • Palatable • Very Nutritious • Drouth resistant
Best honey plant known
Makes your soil produce more

WRITE NOW

HUBAM

BIG MONEY growing seed of most wonderful clover ever discovered • Thoroly tested
Can be grown anywhere • •
Recommended by farmers editors etc. *Ask for booklet.*
HUBAM CLOVER - WHAT - WHERE - WHY

ALABAMA HUBAM CLOVER ASSN
P BOX 61 - NEWBERN-ALA

Write for our Red Catalog with reduced price sheet.

Reductions are from 10% to 35% off our Spring and Summer prices.

LET US MAKE YOUR BEESWAX INTO FOUNDATION NOW, SO YOU WILL HAVE IT READY EARLY IN THE SPRING.

We also render wax from old combs and slum gum.

Send Us a List of Your Requirements in

BEE SUPPLIES

We sell the best possible goods at the lowest possible prices.

W. T. FALCONER MFG. COMPANY

FALCONER (Near Jamestown), N. Y., U. S. A.

"Where the best beehives come from."

Three-Banded Italians

Booking Orders Now for 1922. Queens Ready April 1

Our queen business has more than doubled itself the past two years, and we are looking forward to a bigger trade than ever during 1922; so we are enlarging our queen yards more than double in order to take care of all the trade that comes our way, and will endeavor to fill all orders on due time. We intend to fill all orders with queens raised in our own yards from our best breeding queens. Our Italians are gentle, prolific, very resistant to foul brood, and the best of honey-gatherers. We have sold a good many queens to parties who are using them in stamping out foul brood.

Will book orders for one-fourth cash, balance any time before delivery. Will guarantee safe arrival in the U. S. and Canada. See my ad in the December Gleanings. Circular free.

PRICES APRIL, MAY AND JUNE.

Untested .... $1.25 each; 25 or more .... $1.00 each
Select Untested ... 1.50 each; 25 or more .... 1.25 each
Tested .... 2.50 each; 25 or more .... 2.25 each
Select Tested .... 3.00 each

JOHN G. MILLER, 723 C STREET, CORPUS CHRISTI, TEXAS

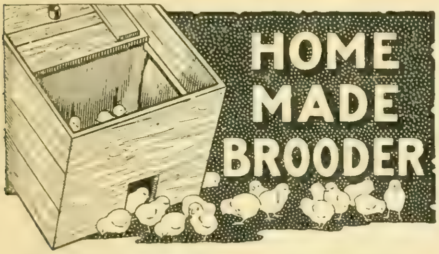
Honey and Hubam

The words are synonymous.

The nectar flow is abundant. Comes early and stays until late fall. Makes water-white honey so coveted by honey producers. Also a boon to the orchardist, the stock raiser, the general farmer. Seed Sense, our monthly magazine, tells about it. Just say HUBAM to us and we'll put you on our list.

Buy your seed of this wonderful new annual white sweet clover early. Buy it from a well-established firm with a reputation for squareness. Price now is $2.00 per pound, for certified seed of our own growing.

The Henry Field Seed Co.
Shenandoah, Iowa.



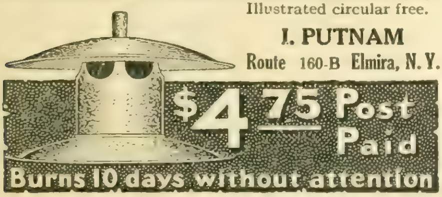
Costs Only $4.96, Complete

In an hour you can make a better brooder than you can buy. No tools needed but saw and hammer. It will do the work of 4 old hens and do it better. The materials, including heater, cost $4.96.

I want you to try my Brooder and will send you plans for making it, together with a Putnam Brooder Heater, for $4.75; all postpaid. Try the Brooder out and if you don't say it's the best Brooder you ever used, return the Heater in 30 days and get your money back. Your dealer will make you the same offer and guarantee. Ask him, but if he does not carry the Brooder Heater, send me $4.75 and I will mail you a Brooder Heater and plans promptly.

Illustrated circular free.

I. PUTNAM
Route 160-B Elmira, N. Y.



HUBAM

THE NEW GIANT HONEY CLOVER

A mass of white bloom until late autumn, heavy with A-1 honey. A summer-long paradise for bees.

Hubam produces an almost incredible yield of honey, and, being annual, saves a year in crop rotation. Sown with grain, it matures after harvest for forage, soiling or seed. Six times as much nitrogenous material for plowing down as Red Clover.

1 to 4 lbs. per acre in 30-in. drills gives big seed yield. Tremendous demand—and the honey is "velvet."

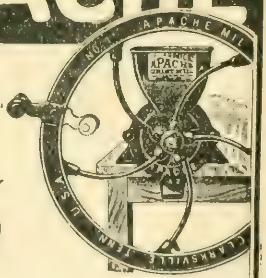
Our Hubam is scarified and certified to be from original Ames stock. Write for further information and prices.

May Seed Shenandoah Brand and Nursery Co.

May Seed &
Nursery Co.
120 Elm Street
Shenandoah, Iowa

This Ball Bearing APACHE Grist Mill

PREPAID FOR ONLY $8.00



FEED the hopper, turn the wheel, and enjoy making your own wholesome whole wheat or graham flour, old-fashioned corn meal, rye flour, chops and hominy, and *bring down living cost.* Best coffee and spice grinder. If you have poultry, grind your chicken feed, save feed money and get more eggs.

Apache grinding plates of special mixture iron made to give longest wear. Steel ball bearings make it only a boy's job to run it. Send money or check today. Satisfaction guaranteed. For the present we can make prompt delivery. So don't delay.

A. H. PATCH, Inc., Clarksville, Tenn.

The Apache Grist Mill is companion to the Black Hawk Corn Sheller, famous for 35 years for its "Can't Wear Out" Guarantee.

BUYING BEES IS LIKE—

Mr. Beekeeper! Buying bees is like buying other stock. The first consideration in the purchase of bees or queens is to get hardy, vigorous stock. Our bees and queens are noted to be very hardy, vigorous, and very resistant to diseases. The second consideration is getting them in time for the honey flow. Send us your order (large or small); you will not have to worry about bees not arriving on time, loss in transit, disease, etc, Do you realize that a nice frame of emerging brood is equal to a lb. of bees? Each package is shipped on a frame of emerging brood with honey. Also nuclei, full colonies. Pre-war prices. 10% will book your order. First-class references if desired. Write for price list and other information.

M. VOINCHE, BUNKIE, LA.

Thagard's Italian Queens

"BRED FOR QUALITY"

The secret of buying queens is not a matter of what you pay for them, but what kind you get. More and more beekeepers are discovering that Thagard Italian Queens have all the good qualities they desire. They are hardy, prolific, disease-resisting and honey producers. Place our queens against any you may obtain anywhere, *and note the results.* Safe arrival, pure mating guaranteed. Write for descriptive catalog.

	1	6	12
Untested	$1.50	$7.50	$13.50
Sel. Untested ...	1.75	9.00	16.00
Tested	2.50	13.00	24.00
Sel. Tested	4.00	22.00	41.00

Prices of Bees.

	1	25 or more
One-pound package...	$3.50	$2.75
Two-pound package ..	5.00	4.50

10% discount for cash with order.

V. R. THAGARD CO. - - GREENVILLE, ALABAMA

QUEENS Nuclei Package Bees

Our queens will fill your hives, with bees full of "Pep"; to fill your supers full of honey, and your pockets bulge with money. Pure Three-Banded Italians only, at prices greatly reduced. Having spent the greater part of my life in Wisconsin and knowing conditions there, I want to call the attention of Northern beekeepers that we are especially interested in their welfare. Our bees and queens won Blue Ribbon at Mississippi State Fair this fall over all competitors. We constantly try to improve our stock and methods. We know we have the best mating hives especially for chilly spring weather. Cells are not given to mere handfuls of bees to hatch and mate. Ten-frame hives divided in three compartments and eight-frame in two. This is expensive equipment in that it takes lots of bees, but we are justified in doing this as there is a steady and growing demand for our queens. A postal brings our folder of prices, testimonials, etc.

We have the very best of shipping facilities, being on main line connecting North and South; few transfers have to be made to reach any point in northern U. S. and Canada. Shipments reach the following cities in record-breaking time: Chicago via St. Louis, one change, 26-30 hours; Detroit, 42 hours; New York, N. Y., 48-50 hours; St. Paul, Minn., 38-40 hours; Toronto and Montreal, Canada, 65 and 74 hours respectively.

Greenville, Miss., July 29, 1921.
Jensen's Apiaries,
Crawford, Miss.

Dear Sir:—I am very well pleased with the appearance of the fifty queens, in fact much more so than with those from any queen-breeder I have bought queens from in a long time.

Respectfully,
W. E. Elam,
Greenville, Miss.
Pres. Yazoo & Miss. Delta Beekeepers' Association.

Untested queens....$1.10 each; over 25....$1.00 each
Select untested .... 1.35 each; over 25.... 1.25 each
Tested, $2.00; Select Tested, $3.00. (Breeders, $7.50 and $10.00 each shipped on one-frame nucleus.)

2-frame Nuclei with young select queens....$5.50 each
Over 10 .... 5.00 each
3-frame Nuclei with young select queens.... 7.25 each
Over 10 .... 6.75 each

1 lb. Italian Bees, $2.75; over 10 packages, $2.50 each
2 lbs. Italian Bees, 4.25; over 10 packages, 4.00 each
3 lbs. Italian Bees, 6.00; over 10 packages, 5.75 each

If queens are wanted, make choice and add price. Will start shipping about April 15th. Send your orders early with 20% to book and be assured of a crop in 1922.

We guarantee pure mating of queens, freedom of disease, safe arrival East of Rocky Mountains in U. S. and Canada. Prompt efficient service and complete satisfaction. We solicit your business.

JENSEN'S APIARIES, Route No. 3, CRAWFORD, MISS.

NORTHERN-GROWN HUBAM SEED

BEEKEEPERS:—Now is the time for all beekeepers to secure the new Hubam annual sweet clover seed for planting on waste land next spring, and to interest and educate their neighbors in planting it. It will pay any beekeeper to give away seed and to instruct neighbors how to grow it, in order to secure bee pasturage from one of the greatest honey-yielders known.

DEALERS:—This is just the time to get prices and to interest prospects for spring. Get the county agents back of this valuable new clover, and arrange with us to get your seed at once.

Hubam seed will be sold by all branch offices of The A. I. Root Company, and by many of our authorized distributers.

Send for our free booklet ''Hubam Clover—What It Is and How to Grow It,'' which contains prices and all necessary information for growing.

THE A. I. ROOT COMPANY
MEDINA, OHIO.

We Wish You a Happy and Prosperous New Year

Is there any better time to make out your order for supplies than now? Look over your stock, and send us a list of your requirements. We can give you the best attention at this time, besides an early order discount of 3% for this month.

Try sending in your order early this year, and see if it doesn't pay. We are here to serve you, and want to help make the season of 1922 the best ever.

F. A. SALISBURY
1631 W. Genesee St.
Syracuse, N. Y.

FOR YOUR 1922 REQUIREMENTS

We will quote you our new prices on your requirements of Bee Supplies. Send us your list. New catalog in January. Send for one.

AUGUST LOTZ COMPANY, BOYD, WIS.

BANKING BY MAIL AT 4%

HAPPY HOMES

Health is the first step in success. Thrift is the next—it goes hand in hand with a happy home.

Open your Thrift Account with this strong, progressive bank at 4%—you can bank with us by mail.

Write for Booklet.

THE SAVINGS DEPOSIT BANK CO.
A.T.SPITZER, Pres.
E.R.ROOT, Vice Pres. E.B.SPITZER, Cash.
MEDINA, OHIO

DINGEE ROSES
On Own Roots

Pot-grown rose bushes, on own roots, for every one anywhere. Plant any time. Old favorites and new and rare sorts, the cream of the world's productions. "Dingee Roses" known as *the best* for 71 years. Safe delivery guaranteed anywhere in U. S. Write for a copy of

Our "New Guide to Rose Culture" for 1922. It's FREE.

Illustrates wonderful "Dingee Roses" in natural colors. It's more than a catalog—it's the lifetime experience of the *Oldest and Leading Rose Growers in America*. A practical work on rose and flower culture for the amateur. Offers 500 varieties Roses and other plants, bulbs and seeds and tells how to grow them. Edition Limited. *Established 1850. 70 Greenhouses.*

THE DINGEE & CONARD CO., Box 118, West Grove, Pa.

VICK'S GARDEN & FLORAL GUIDE
for 1922

IT'S FREE **A WORTH WHILE BOOK** *WRITE TODAY*

For vegetable growers and all lovers of flowers. Lists the old stand-bys; tells of many new varieties. Valuable instructions on planting and care. Get the benefit of the experience of the oldest catalog seed house and largest growers of Asters in America. For 73 years the leading authority on vegetable, flower and farm seeds, plants, bulbs, and fruits. 12 greenhouses. 500 acres.

Vick Quality Seeds Grow the Best Crops the Earth Produces

This book, the best we have issued, is *absolutely free. Send for your copy today before you forget. A postcard is sufficient.*

JAMES VICK'S SONS, 33 Stone St.
Rochester, N.Y. *The Flower City*

Livingston's Famous Tomatoes

STANDARD everywhere—at Agricultural Colleges and Experiment Stations, among all gardeners and truckers, and finest for private gardens. We originate varieties for all climates and conditions, for local or distant markets. Hundreds of acres, tons of high grade seed, 60 years of experience as growers, all mean surest satisfaction and profit to planters of Livingston's True Blue Tomato Seeds. All size packages put up under United States registered Trade Mark seal. No other genuine Livingston grown. Order direct from us and protect yourself.

Livingston's Four Big Specials

Livingston's New Manyfold
Our latest introduction. Heavy cropper. Grows in clusters of from five fruits upwards. All marketable size. Early to mature. Bright red—solid. Excellent quality. Pkt. 15c, ½ oz. 40c, oz. 70c, ¼ lb. $2.00, lb. $7.50.

Livingston's Stone
The greatest canning tomato in the world. Large, bright red, perfectly smooth. Big yielder. Finest flavor and best keeper in cultivation. Ideal for canning and catsup. Pkt. 10c, ½ oz. 25c, oz. 45c, lb, $5.00.

Livingston's Globe
The greatest shipping tomato known. Finest early purple tomato in existence. Very distinct in shape, firm fleshed, of delicate flavor. Splendid for slicing and shipping. Pkt. 10c, ½ oz. 25c, oz. 45c, lb. $5.00.

Livingston's Beauty
Greatest of all purple-colored home market sorts. Strong grower. Very productive. Large. Ripens early, has firm flesh of excellent quality. Pkt. 10c, ½ oz. 25c, oz. 45c, lb. $5.50. **Special prices quoted on larger quantities.**

Eight entire pages in our New 1922 Catalog devoted to tomatoes

New Big Catalog FREE One of the finest seed guides published. Gives truthful descriptions and helpful cultural directions of the best, reliable sorts of vegetable, flower and field seeds. A copy of this instructive 96-page book is ready for you now. Write for it today.

The Livingston Seed Co., 1147 High Street, Colnmbus, Ohio

Italian Bees, Queens and Drones for Sale

Write us for prices on Package Bees with or without queens. Nuclei, also with bees or queen added. Bees and queens by Parcel Post. Drones.

A card will bring our free circular and price list without obligation on your part.

R. V. STEARNS, BRADY, TEXAS

Try Achord's Package Bees and Queens

THREE-BANDED ITALIANS ONLY.

We have the stock, equipment, and experience, and can give you prompt, satisfactory service. We have more than 1000 big, healthy hustling colonies of pure Italian bees to draw from. Write for illustrated price list.

W. D. ACHORD, FITZPATRICK, ALABAMA

CYPRESS BEE SUPPLIES

WELL MADE WHAT ELSE DO YOU WANT? DURABLE

Order a sample and be convinced!

Dovetailed Hive-bodies in lots of 100............60c each.
Covers and Bottom-boards in lots of 100..........50c each
Hoffman Frames ....$50.00 per 1000

Quotations on Special Orders.

THE STOVER APIARIES, MAYHEW, MISS.

TALKING QUEENS

Laws' Queens Speak for Themselves

Untested, each $1.50; 12 for $15.00. Tested, $2.00; 12 for $20.00
Select Tested, $3.50 each; 12 for $30.00.

Some very fine Breeding Queens too good to be idle. Will mail at $5.00 each, or with a 3-frame nucleus by express for $10.00. Write for prices on bees. Safe arrival and entire satisfaction.

W. H. LAWS - - - - BEEVILLE, TEXAS

The Crowning Touch to the Home

It's just a house **until you plant a garden**. Then it becomes a **home**—a place where happiness can be found indoors or out—a living index to the character of those who live within. No wonder real home-makers give such care to planning beautiful gardens!

The choice of varieties is made easy for you by the S. & H. catalog. S. & H. ornamental shrubs are carefully selected, vigorous plants, with abundant foliage and finely colored bloom. All seeds listed are taken from unusually fine strains, proven by our own trials. S. & H. trees are preferred by professional nurserymen and orchardists all over the country. Nearly every thing you need for your garden is listed.

Be sure to send tonight for this interesting, splendidly illustrated catalog.

THE STORRS & HARRISON CO.
Nurserymen and Seedsmen
Box 119
PAINESVILLE, OHIO

1922 PRICES

PACKAGE BEES with select three-banded Italian queens delivered to your address via parcel post, postage paid by me. Prices:

1-pound package with young Italian queen	$4.50
2-pound package with young Italian queen	6.00
3-pound package with young Italian queen	7.50

25 cents per package less for twelve or more packages.

The high quality of my queens, combined with prompt service and reliability, justifies the above prices. Let me book your order now with 10 per cent cash, balance just before shipping. Will send bees on the day you name. Pure mating of queens, safe arrival, and satisfaction guaranteed.

JASPER KNIGHT
HAYNEVILLE, ALA.

Package Bees
----AND----
Reliable Queens

GOLDEN AND THREE-BANDED ITALIANS

We are now in a position to accept orders for queens and bees for spring shipping in large quantities. We have the stock and experience necessary to handle your orders, whether large or small.

1-lb. Package with Queen			$3.00
2-lb. Package with Queen			5.00
3-lb. Package with Queen			7.00
Tested Queen	1, $2.50;	six	12.00
Untested	1, 1.25;	six	7.00
Select Untest.	1, 1.50;	six	8.00

We are in position to fill orders from 100 to 5000 queens or packages. Safe arrival and satisfaction guaranteed. Terms, 25% to book orders.

E. A. SIMMONS
GREENVILLE - - - - ALABAMA

ON DEC. 31st, 1921, old Dad Time made a call on us. He gathered together all the things of the past year, the joys and sorrows, the sunshine and the shadows, the failures and successes, bid us a Good Day, and set out again on his rounds. He will be back, too, in just another year, for the package we will have for him.

We've been thinking since his visit, not so much of last year, but of the one ahead: For while we realize that our fine year at C. B., now just past, is due to the confidence our friends place in us, we are determined to warrant it by giving their continued business, close and promptest attention. Likewise we are determined that the mistakes of the past, and there were a lot of them, too, shall be real lessons to us, and that so far as humanly possible, they shall not occur again. We are thinking, too, that while beekeeping made splendid advances in 1921, it will go still forward in '22; and we renew our pledge to boost this fascinating business to the fullest extent of our ability in the year ahead.

What we are wishing for all is that when this punctilious Good Father calls on you again, he will find that the bundle you have for him then will be crammed full of success and true happiness. That's what we mean when we wish you all a glorious year in 1922.

THE A. I. ROOT COMPANY OF IOWA

Council Bluffs, Iowa

Bees and Queens for 1922

Is there a great difference among bees and queens? Mr. Beekeeper, with bees and queens a small difference counts high. A small per cent better laying queen will greatly increase the field force; this will insure a larger honey yield per colony. A small per cent better worker will aid wonderfully. A small per cent more gentleness will greatly reduce the stings; this increases the efficiency and speed of handling, not counting the pleasure. A small per cent of better marking adds wonderfully to the beauty of the colony. By developing the small quantities of my bees and queens I have attained marked success in producing better queens and bees. My aim is to produce bees and queens that will meet the high standard required by beekeepers. Let me book your order for 1922. One-fourth the full amount will insure your getting bees and queens when you want them most next spring. Perfect satisfaction, safe delivery, and pure mating guaranteed. Pure Italian bees and Three-band Italian queens of the better kind.

Untested—1, $1.50; 6, $7.50; 12, $13.50. Selected Untested—1, $1.75, 6, $9.00; 12, $16.50. Tested—1, $2.50; 6, $13.00; 12, $24.50. Selected Tested—1, $4.00; 6, $22.00; 12, $41.50. One pound bees, $2.75; two pounds bees, $4.75; three pounds bees, $6.75. If queen is wanted with bees add price. Write for prices on large lots.

N. FOREHAND - - - - RAMER, ALABAMA

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Will be sent you for the asking. This is our 1922 booklet with prices and twenty pages on selecting a strain of bees, rearing queens and packing and shipping bees. It tells you the good points to look for in a strain of bees and how

Forehand's Three Bands

The Thrifty Kind

have stood the tests of America's best apiarists for thirty years. It briefly tells of the growth of our business since 1892. This little booklet will be interesting and helpful to all interested in apiary culture. A copy will be sent you free.

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Fort Deposit, Alabama

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We Ship When You Want Them.
We Will Book Only What We Know We Can Fill.

Italian Bees and Queens
of the best strain

1-lb. Package....$3.00; 15 or more....$2.20 each
2-lb. Package.... 5.00; 15 or more.... 3.50 each
3-lb. Package.... 7.00; 15 or more.... 5.20 each

Young Queens Only

Italian Queens a Specialty

Write Us Your Wants.

1 Selected Untested, $1.50; 12 or more, $1.20; 25 or more, $1.10. Queens are raised for us by queen specialist and selected by us for our trade. 20% down books your order.

No Disease *Quality* *Service*

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A Superior Quality at Less Cost

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MADE BY THE DIAMOND MATCH CO.

A Superior Quality at Less Cost

One-Story Dovetailed Hives

Complete with Diamond Cover and Bottom-Board, Hoffman Frames, metal rabbets and all inside fixtures.

Crates of five, eight-frame	$10.50
Crates of five, ten-frame	11.00

Standard Hoffman Frames

100	$ 5.50
500	25.00

Aluminum Honeycombs, as now made by Duffy-Diehl Co., are meeting with success. We carry these in stock to supply Eastern beekeepers.

HONEY! HONEY! HONEY!

Beekeepers who are supplying Honey to a regular family trade, or who are located along the highways, and are supplying motorists, know that their customers want a honey of a uniform color and flavor. And unless the honey is at all times uniform in color and flavor, customers sometimes become dissatisfied. Our special blend of Fancy Honeys (liquid) is always uniform and is of a fine mild flavor, and will satisfy the most exacting trade.

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10-lb. Tins, 6 per case	16c lb.
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Extra Light Amber Sage	11c lb.
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2½-lb. Cans, 2 dozen reshipping cases, $1.45 case; crates of 100	$5.00
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White Flint Glass, With Gold Lacquered Wax Lined Caps.

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16-ounce Honey Capacity	$1.40 per carton of 2 dozen
Quart or 3-pound Honey Capacity	$1.00 per carton of 1 dozen

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Order now from the

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Incorporated.

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Nothing but staple lines of quality goods will be handled by the Michigan Exchange.

OUR PACKAGE BEES AND QUEENS

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Untested Queens, $1.00; Tested Queens, $1.50
1 Pound Bees, $2.00; 2-Pound Bees, $4.00
3-Pound Bees, $6.00

Your satisfaction guaranteed.

The MICHIGAN HONEY PRODUCERS EXCHANGE is an organization of beekeepers in Michigan and nearby States. You are invited to become a member of this co-operative organization.

Order your Supplies, Your Package Bees and Queens from the Exchange Now. Send for Price List.

THE MICHIGAN HONEY PRODUCERS EXCHANGE, Inc.
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E. D. Townsend, Chairman Board Directors. G. W. Dial, Manager.

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This modern apiary appliance is being used by beekeepers in many states and countries.

Buy these combs from your regular dealer. Any bee supply dealer can furnish them. They are now carried in stock by the following:

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In the South:

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G. B. Lewis Co., Memphis, Tenn.
Texas Honey Producers' Assn., San Antonio, Tex.

Lower Prices

For the season of 1922 the prices on Aluminum Honeycombs are greatly reduced.

Modified Dadant or Jumbo Frames	60c each
Langstroth or Hoffman Frames	50c each
Shallow Extracting, any style	45c each

The above prices are f. o. b. factory or dealers' stock. Write to your dealer for quantity discounts on orders of 500 combs or over.

Be sure to buy the combs manufactured in Texas by

THE ALUMINUM HONEYCOMB COMPANY OF TEXAS
SAN ANTONIO, TEXAS

The New Year Is Here

Unusually good conditions for wintering prevail up to this date.

The 1921 honey crop will be off the market before spring.

The demand for goods is and will be greater than ever before

Prices on bee supplies are moderate.

Better get your material ready for the bees during the quiet winter months. It spells success.

Why not take advantage of the early order quantity discounts on your season's equipment? Others do it, why not you?

Send for our 1922 catalog. We sell "Root Quality" goods only.

Our catalog for the asking.
We love to quote prices.
We want beeswax for cash or trade.

M. H. HUNT & SON
510 N. Cedar Street - - Lansing, Michigan

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SUIT OTHER PEOPLE BESIDES LATHAM

"The 40 queens arrived in fine condition. All beauties."
"Those queens you sent me beat anything I ever saw. My hives are full of bees."
"The queen I received from you has the greatest amount of brood of any queen in my yard, and I have queens from nine different breeders."
"We are delighted with the quality of stock you have sent us." (100 queens went here.)

"The 25 queens received July 1st are certainly fine."
"I am delighted with the queen you sent me."
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"Your queens have been highly satisfactory in the past, so you see I am coming again. 'She-suits-me.'"

SHE-SUITS-ME QUEENS

ARE LINE-BRED ITALIANS

Vigorous, prolific, and throwing workers that are snappy and hustling, they meet the need of the practical beekeeper. They are dependable, and their presence in your hives means profit to you. You will wish some of the daughters of the queens selected as breeders for the season of 1922. Fifty full colonies and seven hundred nuclei devoted exclusively to my queen-rearing business.

PRICES—Untested from May 15 to June 15, $2 per queen; if 10 or more go in one shipment $1.75 per queen. After June 15 and until November from 1 to 9, $1.50 each; from 10 to 24 $1.30 each; from 25 to 49, $1.25 each; from 50 to 99, $1.20 each. 100 queens $115.00. Tested queens $3 the entire season.

DISCOUNT—Upon all orders received prior to April 1, 1922, a discount of 20% will apply.

TERMS—10% of price must accompany order to insure discount and booking, and the remainder must be remitted before the queens are mailed.

Send for price list of queens, packages, and nuclei. Packages for the New England States a specialty.

ALLEN LATHAM
NORWICHTOWN, CONN.

1922 Prices

Compare them with last year's prices.
Here are a few examples:

	1921 Price	1922 Price
5 Hive-bodies and Frames . . .	$12.25	$8.00
5 Hives with Metal Covers . . .	26.25	18.00
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Frames, per thousand	112.00	70.00
Sections, per thousand	22.00	15.00

Note the reduction of from 25 to 40 per cent. Early order cash discount for January, 3 per cent additional.

In spite of this great price reduction, Root Quality is now better than ever before, and is constantly being improved.

* * *

Airco Comb Foundation

----the foundation with perfect cell base and made by improved refining process----is manufactured not only at Medina, but also at Council Bluffs, Iowa; San Antonio, Texas; Los Angeles, Calif., and Ingersoll, Ont., Canada.

Brief History of the Honey Extractor

The first crude honey extractor was invented by Hruschka of Venice, Italy, in 1865. In 1869 A. I. Root constructed the first metal extractor with revolving reel and stationary can. This was called the Novice extractor, and at that time was a great improvement over any other extractor in use. Then came the Cowan extractor with swinging pockets, shortly followed by the Root Automatic with pockets reversed mechanically while at rest. Finally, in 1919, after years of experimenting, the Root Full Speed Reversing Extractor was perfected, and after two years of actual testing among all kinds of adverse conditions, it has proved to be the fastest and sturdiest machine ever built. Last season it withstood an overspeed test of 350 R. P. M., without injury to fragile combs.

Our 1922 catalog with greatly reduced prices is out. If you haven't yet received a copy of this handsome new edition, send for one at once.

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Indianapolis, St. Paul, Norfolk,
New Orleans, Syracuse, N. Y.,
Savannah, Ga.

"52 Years in the Bee Supply Industry"

Agricultural
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Gleanings
in
Bee Culture

February

Vol. L 1922 No. 2

LOWER PRICES

Pending the publication of our new catalog, send us your lists of requirements of bee supplies and we will quote you our new prices. **New** catalog out January, 1922, mailed on application.

THE MILLER BOX MANUFACTURING CO.
LOS ANGELES, CALIF.

"GRIGGS SAVES YOU FREIGHT"

TOLEDO

How About Supplies for Next Season's Use? A Complete Stock Always on Hand and of THE BEST GOODS MADE.

LOWER PRICES

On all supplies with Is the reason you should buy NOW. SPECIAL PRICES offered on Shipping Cases, Extractors, Uucapping Cans.

HONEY AND WAX
taken in exchange for supplies.

Send for NEW CATALOG.

THE GRIGGS BROS. CO.
DEPT. 25, TOLEDO, OHIO.

"GRIGGS SAVES YOU FREIGHT"

Now Located in Our New Home

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(Near Katy Depot)

And have just installed a complete set AIRCO Comb Foundation Mills, which we invite you to see in operation. An inspection will convince you why beekeepers are claiming AIRCO superior to any.

We make your wax into this unexcelled foundation.

Prices for working wax into AIRCO Foundation furnished on application.

Our stock of ROOT QUALITY Bee Supplies is also complete, so we are prepared to give you real service.

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OF TEXAS
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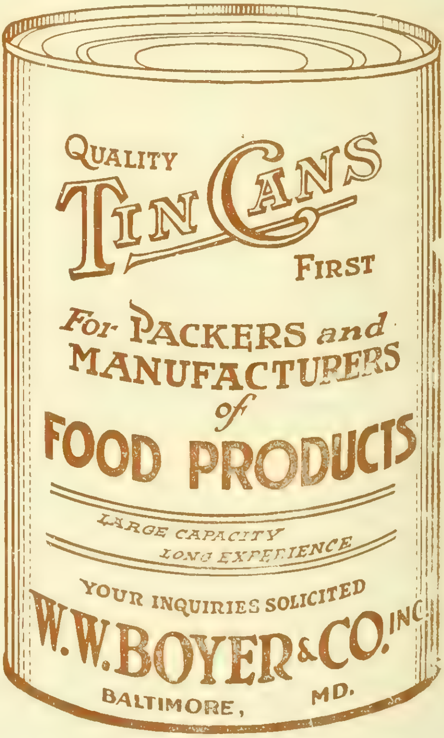
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LARGE CAPACITY
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YOUR INQUIRIES SOLICITED
W.W. BOYER & CO. INC.
BALTIMORE, MD.

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Entered as second class mail matter at the Postoffice at Medina, Ohio. Published monthly. Space occupied by reading matter in this issue, 56.2 per cent; advertising, 43.8 per cent.

THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

Editorial Staff

Geo. S. Demuth and E. R. Root	A. I. Root	H. H. Root	H. G. Rowe
Editors	Editor Home Dept	Assistant Editor	M'n'g Editor

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We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *We pay the highest cash and trade prices for beeswax.*

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"BEST BY TEST"

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We also manufacture Hoffman frames, dovetailed beehives, etc. Quality unexcelled; prices on request.

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(Manufacturers of Weed Process Foundation.)

A Word to the Wise

Our 1922 catalog will be
ready in January. Mail a
list of your requirements
for our special quotations.

The Fred W. Muth Company
Cincinnati, Ohio

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Send in a list of your needs of BEE SUPPLIES for the coming season and get quotations on it.

1922 CATALOG, illustrated, now ready! MONDENG'S bee supplies speak for themselves.

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146 Newton Ave. N. and
159 Cedar Lake Rd.
MINNEAPOLIS, MINNESOTA.

IS IT THE "BEST" YOU ARE
AFTER IN QUALITY OF
GOODS AND SERVICE?

Then Try Us!

This is the month to send us your order. You will get our best attention, and goods from our new stock. Order now before the "rush." Send for our catalog, and let us enter into your plans for making the season of 1922 a

"HUMDINGER."
Have everything on hand ready for the bees, and they will do their share.

F. A. SALISBURY
1631 West Genesee Street,
SYRACUSE, N. Y.

HONEY MARKETS

U. S. GOVERNMENT MARKET REPORTS.

Information from Producing Areas (First Half of January).

CALIFORNIA POINTS.—Recent heavy rains have strengthened the prospects for a heavy flow of high-grade honey next season. Many beekeepers who have been holding back some of their higher-priced honeys are now offering them, due to the outlook of a heavier crop. The movement has been limited during the past two weeks and the market has been dull. Low prices of sugar and syrups thought to have an adverse effect on honey prices. Competition with cheaper honeys from Inter-Mountain districts also lessening the movement of white sage and white orange from California. It is believed that the old crop will all be cleaned up before the new crop is harvested, but local demand will be an important factor in the amount of honey that is left. Large shippers quote to outside buyers, in carlots and less, f. o. b. shipping points per lb.: White orange blossom, offered at 12c, but no sales; white sage, nominally 10½c; light amber sage, 8½c; light amber alfalfa, 6½-6¾c. The whole range of prices can be considered nominal, as so few sales were made. Little demand is also experienced for Hawaiian honey, which is offered in carload lots, f. o. b. San Francisco at 3½c per lb. for honeydew grade.

INTERMOUNTAIN REGION.—Bees with ample stores are wintering well, as the temperature to date has been moderate, while not so mild as to induce activity. The holiday business has been light, but conditions are now expected to improve, and some buyers are making slightly improved offers. Considerable honey from some sections being consigned. Carlot sales of white sweet clover and alfalfa are reported at 8-8½c, most 8½c per lb., with l. c. l. sales of 5-gallon cans at 9-10c, few 11-12c per lb. Carlot sales No. 1 white comb are reported at $4.75 per 24-section case, with No. 2 grade selling at $4.25-4.40 per case. L. c. l. transactions in No. 1 grade are reported at $5.00-5.50 per case. Beeswax has been purchased for 20c cash or 22c trade, with some transactions at higher prices. In Salt River Valley, Arizona 6¼c per lb. is quoted for a carlot of amber alfalfa honey. Heavy rains in the Valley point to a big crop next year. Due to the presence of alfalfa weevils and the low prices of alfalfa hay in some sections of Idaho, a considerable alfalfa acreagew ill be plowed up in the spring, reducing the feeding area for many colonies.

TEXAS POINTS.—Crop outlook not favorable, due to long drouth in the fall. Bees considered in normal condition. Some light amber extracted honey is selling at 7½c per lb., but the 1921 crop is about exhausted in many localities. Most of the honey in the state was disposed of in the summer and fall at 8½c per lb. for extracted and 12½c for bulk comb honey.

EAST AND NORTH CENTRAL STATES.—Prospects good for next season as fields are generally well covered with snow. Conditions considered ideal for bees which were properly prepared for winter. Cellar-wintered colonies reported in good condition; colonies wintered in summer stands have, in favorable localities, enjoyed a few hours of flight since last report. While moving more freely than last season, comparatively little honey has been sold during the past month, as the attention of buyers has been more closely centered on candy than on honey Bottlers are offering 9-10c per lb. in carlots, but few sales were made at those figures. Less than carlot sales of white clover reported at 12-14c per lb. in 5-gallon cans. White comb ranges $4.80-5.25 per case in small lots. Comb honey is so nearly exhausted in Wisconsin that western honey is now being shipped into that state. Further, western extracted honey is being bought by Wisconsin bottlers for blending as the delivered price is cheaper than local goods can be purchased at.

NORTHEASTERN STATES.—The crop outlook for next season is reported as fair, altho the lack of snow in some areas is harmful to clover. Bees are wintering well, but the opportunity for a cleansing flight is badly needed by some colonies. The honey movement is light, as is usual at this time of year. The supplies of most beekeepers are already largely exhausted. No. 1 white comb is reported at $5.00 per case, and No. 1 buckwheat at $4.00-4.25 per case. No large transactions were reported for extracted white clover in 5-gal. cans, but in 5-lb. pails it has sold freely. Buckwheat honey in barrels is reported as moving at 7c per lb.

SOUTHEASTERN STATES.—Supplies light. Few sales reported of amber extracted at 7½-9c, white 10-12c per lb. Abundance of cane syrup around 50c per gal. is held partly responsible for the light demand this season. In Mississippi and Louisiana rain has been plentiful, and crop outlook and colonies are both good. In Georgia and Florida recent cold weather has kept bees inside the hives except on favorable days. Bees are bringing in pollen from the maple for brood-rearing.

Telegraphic Reports from Important Markets for January 14, 1922.

CHICAGO.—Since last report 1,000 lbs. each Wisconsin, Kansas, Iowa and Texas arrived. Extracted: Demand and movement very slow, most sales in small lots. Operators taking inventory and not pushing sales. Better movement expected. Market about steady. Sales to bottlers, bakers and candy manufacturers, per lb., Colorado and Idaho, alfalfa and clover, white 11-11½c light amber 9¼-10c, mixed flavors dark 8¾-9¼c. California, white sage 11-11½c. Michigan and Wisconsin, basswood and clover, white 12-12½c. Comb: Demand and movement very slow, market weak. Michigan, Ohio and Minnesota, clover and alfalfa, 24-section cases No. 1, $5.25-5.75; No. 2, $4.00-4.50. Beeswax: Receipts moderate. Demand and movement moderate, market barely steady. Sales to wholesale druggists, laundries and ship-supply houses, African and South American, crude 15-16c.

NEW YORK.—Domestic receipts limited, foreign receipts moderate. Supplies limited. Demand light, market dull but slightly better feeling. Extracted: Spot sales to jobbers, wholesalers, confectioners, bakers and bottlers, domestic per lb. California, light amber alfalfa 7-8c, light amber sage 8½-10c, mostly 9-10c, white sage 11-12c, white orange blossom 13-14c, mostly 13c. New York, white clover 11-12c, buckwheat 7-8c. West Indian and South American refined 60-70c per gal. Comb: Supplies light. New York 24-section cases white clover No. 1, $6.00-7.00; buckwheat, mostly $4.50. Beeswax: Foreign receipts moderate. Supplies limited, sales to wholesalers, manufacturers and drug trade, South American and West Indian crude light, best 23-24c, few 25c, slightly darker 18-22c. African, dark 15-17c, few 18c.

From Producers' Associations.

There has been little movement of honey in the past 30 days, but there is developing a better demand for extracted honey. Bulk comb is no longer on the market, and only a few producers still have honey to sell. The price to producers on the 60-lb. basis is stationary at 8 to 9 cents. The last month has been so warm that the bees have consumed large amounts of stores. If spring does not come early, wholesale feeding will be necessary. Rain is badly needed over the southwest part of the state.

Texas Honey Producers' Association.
San Antonio, Texas. E. G. LeStourgeon.

Do not expect much business ordinarily the latter half of December, therefore were not disappointed on the small volume during this period. If retailer will offer honey on a fair margin of profit and will push it, there should be a large movement between now and April, as fruits and pantry stores are getting well cleaned up.

The Colorado Honey Producers' Ass'n.,
Denver, Colo. F. Rauchfuss, Secretary.

THE A. I. ROOT COMPANY'S QUOTATION.

Medina, O., Jan. 24, 1922.

We are in the market for three carlots of white-to-water-white western extracted honey for which we will pay 8½c cash, f. o. b. shipping point, on approval of samples submitted. Above quotation based on carlots. We have ample stocks of white clover, also of amber and light amber grades, and are not in the market for comb at present time. (No shipments of honey will be accepted under any conditions except as ordered by our purchasing department.)

The A. I. Root Company.

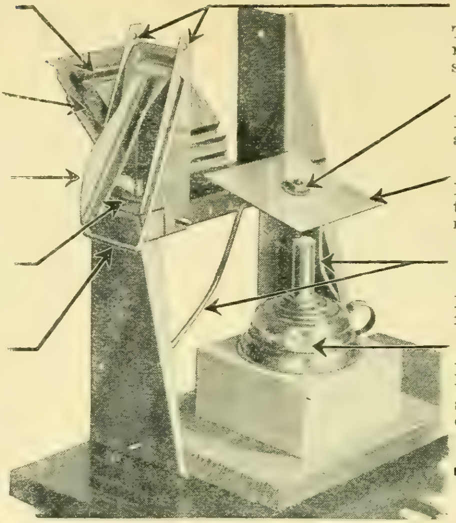
THE OPINIONS OF HONEY PRODUCERS THEMSELVES AS REPORTED TO GLEANINGS IN BEE CULTURE.

Early in January we sent to actual honey producers and some associations the following questions:

1. **What portion of the 1921 crop is still in the hands of producers in your locality? Give answer in per cent.**
2. **What price are producers receiving for honey at their station when sold to large buyers? (a) Comb honey? (b) Extracted honey?**
3. **What are prices to retailers in small lots? (a) Comb honey fancy or No. 1 per case? (b) Extracted honey in five-pound pails or other retail packages?**
4. **How is honey now moving on the market in your locality? Give answer in one word, as slow, fair or rapid?**
5. **How much more honey has been sold locally this season than usual? Give answer in per cent, using amount formerly sold locally as basis.**

The answers as returned by our corps of honey and bee reporters are as follows:

States.	Reported by	Crop Unsold.	In Large Lots.		To Retailers.		Movement.	Increased Locally.
			Comb.	Extracted	Comb.	Extracted		
Alabama	J. M. Cutts		$4.80	$0.08	$5.00	$0.60	Slow	250
Alabama	J. C. Dickman	10		.08		.75	Fair	
Arkansas	J. Johnson	25	4.80		6.00	1.00	Slow	50
Arkansas	J. V. Ormond	0				1.00		100
British Col	W. J. Sheppard	10		.28		1.75	Fair	100
California	M. C. Richter	85				1.15	Slow	30
California	M. A. Saylor	10	3.00	.09	3.60	.75	Fair	50
Colorado	B. W. Hopper						Slow	0
Colorado	J. A. Green						Fair	105
Connecticut	A. W. Yates	20	6.00	.15	8.00	1.00	Slow	100
Florida	C C. Cook	40		.08		.65	Fair	50
Florida	H. Hewitt	5		.08		.85	Fair	4400
Florida	W. Lamkin	5		.09		.75	Slow	
Georgia	J. J. Wilder	60	5.00	.10	6.00	.75	Slow	85
Illinois	A. C. Baxter	0			6.50	1.25	Slow	100
Illinois	C. F. Bender	0			6.00		Slow	100
Illinois	A. L. Kildow	0	5.25	.12	6.00	.85	Rapid	20
Indiana	T. C. Johnson	3			6.00	1.15	Slow	25
Indiana	E. S. Miller				6.00	1.25	Fair	30
Indiana	J. Smith	0			8.00	1.25	Fair	25
Iowa	E. G. Brown	20		.11	5.50	.90	Rapid	25
Iowa	F. Coverdale	0			6.50	.70	Fair	
Iowa	W. S. Pangburn	30		.13	4.00	.90	Slow	
Kansas	C. D. Mize				6.50	.75	Slow	
Kansas	J. A. Nininger	0			6.00	.75	Slow	20
Louisiana	E. C. Davis	20		.09		.75	Fair	25
Maryland	S. J. Crocker, Jr.				5.75	1.00	Fair	
Massachusetts	O. M. Smith					1.25	Slow	
Michigan	I. D. Bartlett	5				.75	Fair	500
Michigan	L. S. Griggs	25	4.80	.12	6.00	1.25	Slow	100
Michigan	F. Markham	15	5.50	.13	6.00	.85	Fair	125
Mississippi	R. B. Willson			.07		.85	Fair	125
Missouri	J. W. Romberger		5.25	.11	6.25	.95	Fair	100
Nevada	L. D. A. Prince	0					Fair	
Nevada	T. V. Damon	0	4.50	.08	5.00		Good	
Nevada	E. G. Norton						Slow	
New Jersey	E. G. Carr				6.50	.80	Fair	20
New York	Adams & Myers	15			6.50	1.00	Fair	100
New York	G. Howe	0			7.20	.95	Fair	50
New York	F. W. Lesser	0						
New York	G. J. Spahn	10			6.00		Slow	
New York	H. L. Stevens	5		.09		.90	Fair	100
North Carolina	C. S. Bumgarner					1.25	Fair	110
North Carolina	W. J. Martin	10	6.00	.11	9.60	1.60	Slow	
Ohio	E. G. Baldwin	10	4.75	.07	6.75	.90	Fair	50
Ohio	R. D. Hiatt	10			6.00	1.15	Fair	200
Ohio	J. F. Moore	10	4.80	.12	4.80	.80	Slow	
Oklahoma	J. Heueisen	0				1.00		100
Oklahoma	C F. Stiles	0						
Oregon	E. J. Ladd	10			6.25	1.00	Fair	80
Oregon	H. A. Scullen			.11	5.80	1.00	Fair	
Pennsylvania	H. Beaver	10		.08		.70	Fair	50
Pennsylvania	D. C. Gilham	20			7.00	1.00	Fair	
Pennsylvania	G. H. Rea	10			6.50	.95	Fair	100
Rhode Island	A. C. Miller	0					Fair	
South Carolina	A. S. Conradi	0			6.50	1.10	Rapid	25
Tennessee	G. M. Bentley	1		.25	9.50	1.75	Fair	50
Texas	T. A. Bowden	18				.80	Slow	
Texas	J. N. Mayes	5	3.60	.12		.90	Rapid	10
Texas	H. B. Parks	10		.13		.80	Fair	15
Utah	M. A. Gill	5			4.50	.60	Fair	25
Utah	N. E. Miller	10		.08		.50	Fair	75
Virginia	T. C. Asher	15				1.25	Fair	
Vermont	J. E. Crane				7.50	1.30	Fair	100
Washington	G. W. B. Saxton	15		.15		.75	Slow	
Washington	G. W. York	25		.11	6.00	.85	Slow	25
West Virginia	W. C. Griffith	0			7.50	1.00	Fair	100
West Virginia	T. K. Massie	5					Fair	
Wisconsin	N. E. France	15		.15		.60	Slow	
Wisconsin	E. Hassinger, Jr.	5				.75	Slow	35
Wisconsin	H. F. Wilson	5		.13	7.00	.95	Rapid	
Wyoming	A. D. Brown	50	5.00		6.10	1.00	Slow	25



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GLEANINGS IN BEE CULTURE

FEBRUARY, 1922

EDITORIAL

The Miller Memorial Library Fund.

SINCE many of the beekeepers' associations are taking up the subject of the Dr. Miller memorial, at their winter meetings, thus adding constantly to the list of donors, we have decided to wait until the April issue before publishing this list in Gleanings, thus giving time for us to include the contributions now being made at these meetings. The names of contributors to this fund who made their contributions thru Gleanings and The A. I. Root Co. up to November were reported to C. P. Dadant, Hamilton, Ill., chairman of the committee in charge of this fund. These names were printed in the January issue of the American Bee Journal.

* * *

Movement Among Farmers to Increase Acreage of Clover.

THE American Farm Bureau Federation suggests that county farm bureaus would do well to use the facts and figures of the corn situation as a basis for discussions on the limitation of corn acreage and the expansion of the legume acreage for 1922. This great federation suggests that "Pitch Clover" may be better than "Plant Corn" for the coming year. Such a movement should benefit beekepers wherever any of the clovers are grown. While the farmers are debating as to just what legume to plant in reducing their acreage of corn, it is a good time for beekeepers to see that their farmer neighbors are well supplied with good literature on sweet clover (both the Hubam and biennial varieties) and alsike clover in regions where these plants do well. Several bulletins on growing sweet clover as a farm crop have been published by the United States Department of Agriculture within recent years, and at least one (Farmers' Bulletin 1151) on alsike clover. No doubt many of these can still be had free by writing to the Department of Agriculture at Washington. In addition to these, several states have published similar bulletins, which can be obtained by writing to the state agricultural colleges. By consulting with the county agent or the local farm bureau, beekeepers can, no doubt, make arrangements for a wider distribution of such literature in their localities, which should benefit the farmers as well as the beekeepers.

* * *

More Honey Sold Locally Than Ever Before.

OUR readers will note the tremendous increase in the amount of honey sold locally, as reported on our market page by honey producers themselves, who are reporting for this page (see page 69, last column).

The figures given this month should be compared with those given last month, where the percentage of the total crop of honey sold locally is given by the same reporters. While these figures, to a certain extent, reflect the handling of the reporter's own crop, they are in each case, so far as possible, a report for the community represented, so that the figures here given are representative of conditions as they exist thruout the country.

Much of the honey sold locally this year must have gone to new consumers, since in many locations, where it has been the custom for beekeepers to ship away practically all the honey produced, a large percentage of honey produced last season has been sold locally. This new outlet for honey, which has been created by the beekeepers themselves, is largely responsible for steadying the honey market last fall. If the honey carried over from 1920, together with the 1921 crop, had been dumped upon the general market to be handled thru the regular trade channels, the results would have been disastrous.

The honey producers of this country are to be congratulated in finding these new outlets for their product. One serious mistake has been made by some in selling honey in a retail way at the wholesale price. This abuse will, no doubt, correct itself ultimately, especially if market information, such as that furnished by our market page and other bee journals as well as that furnished every two weeks by the Bureau of Markets and Crop Estimates, can be sufficiently distributed among beekeepers everywhere.

The Problem of Better Combs.

FOR MORE than 50 years American beekeepers have been striving for better combs, especially those used in the brood-chamber. The invention of comb foundation thus far stands out as the greatest single step in this direction; but, as beekeepers know, the use of comb foundation does not always result in perfect combs. Poor combs in the brood-chamber are even now causing annually tremendous losses to those beekeepers who are not fully alert to the importance of good combs, for they stand in the way of the most rapid and complete building-up of the colonies in the spring and also promote swarming. In order to insure best results in honey production it is now necessary to sort over the brood-combs, from time to time, to cull out those which are not best suited for brood-rearing.

The aluminum honeycomb which is being tried out by beekeepers all over this country, as well as in some foreign countries, has therefore created great interest among beekeepers everywhere. In England, the Semi-Comb, which is also made of aluminum, is creating great interest among British beekeepers. The experimenting with wood-base foundation, described by H. H. Root in this issue, is another attempt to solve this problem, and while not as revolutionary in character as metal combs, the success attained thus far will, no doubt, create great interest, for beekeepers are becoming more and more alert concerning the securing of better combs. With all the effort now being made and with thousands of beekeepers studying the same problem, surely something will be worked out that will give us better and more durable combs. Just what the final solution will be, no one can now tell.

In the meantime beekeepers should not plunge heavily into an equipment of either of these new things until quite sure that they will answer every purpose. Beekeepers are too often prone to experiment with new equipment on too extensive a scale, letting their enthusiasm for something new run away with their better judgment. It will be infinitely better to try these on a small scale at first. Perhaps neither of these new developments will answer the beekeeper's purpose fully. We can well afford to go slow with them while they are still in the experimental stage of development.

* * *

Destroying Old Bees in Fall to Save Stores.

IN an article in this issue, E. F. Atwater points out certain conditions under which it may be profitable to eliminate the old bees from strong colonies in the fall, wintering only the younger ones, the purpose being to save stores and prevent building up too early in the spring. In most localities there is usually no complaint about colonies being too strong in the fall. Where there is a considerable period of time after the close of the main honey flow before the beginning of winter, or where the late honey flow is meager, the colonies naturally go down to normal winter strength. In fact, the trouble is perhaps more often the other way, for thousands upon thousands of colonies go into the winter every year too weak for safe wintering.

Practical honey producers will, no doubt, be more inclined to criticise Mr. Atwater's suggestions, in regard to destroying the old bees, on the ground of economy than from sentiment. Instead of rearing a lot of bees that are too old for winter when winter begins and then destroying them, would it not be better to prevent the rearing of these bees? This could be accomplished by killing the old queen, then after an interval of queenlessness, requeening the colonies at such a time that most of the old bees will disappear before winter. The winter colony will then be made up of young bees reared from the young queen.

No doubt, however, as Mr. Atwater implies, these old bees in the fall help the colony to winter better, thus resulting in a stronger colony in the spring; but, as Mr. Atwater points out, it is not desirable in his locality to have the colonies very strong in early spring on account of the relative lateness of his main honey flow. In such cases why not so manage that the colonies shall come thru the winter as strong as possible, then divide them in the spring before they have had a chance to reach full strength but in time for each division to build up to maximum strength by the time the main honey flow begins? Thus two colonies will be made, each of which, if ample stores are provided, should be in better condition for the honey flow than the original colony would have been if left undivided. If increase is not wanted, the colonies can be united back to the original number some time in August, thus saving in fall brood-rearing, since the united colonies would then rear only about as much brood as each would have reared if not united.

* * *

Four New Bulletins for Beekeepers.

THE United States Department of Agriculture has just issued three new Farmers' Bulletins, outlining the beekeeping management required for best results in three important honey-producing regions as follows: Farmers' Bulletin 1215, ''Beekeeping in the Clover Region''; Farmers' Bulletin 1216, ''Beekeeping in the Buckwheat Region''; and Farmers' Bulletin 1222, ''Beekeeping in the Tulip-tree Region.'' Each of these bulletins shows by an outline map of the United States the territory included within the region indicated.

The peculiarities of each region are discussed in each case, and simple directions are given for a system of management to meet the requirements of the locality. Beekeepers will, no doubt, welcome this method of handling the subject of management in beekeeping, the details of which must of course differ for different regions. These bulletins can be obtained free while the supply lasts by writing to The Bureau of Entomology, Washington, D. C.

The fourth new bulletin is United States Department of Agriculture Bulletin 998, ''Heat Production of Honeybees in Winter.'' This is a report on the study of a colony of bees in a respiration calorimeter. With this apparatus, the energy output of a colony was measured by measuring both the respiratory products given off by the bees and the amount of heat given off within certain intervals of time. The temperature of the air surrounding the hive was changed from time to time to determine the amount of heat and respiratory products given off at different temperatures. The oxygen content of the air, the percentage of carbon dioxide and the humidity were changed, and the response of the bees to these changes carefully noted.

One of the surprises in this connection is that neither an excess of carbon dioxide nor a considerable deficiency of oxygen affected the bees adversely. In fact, a lack of ventilation apparently had a quieting effect upon them.

The energy produced by the bees when they were about as quiet as they are under most favorable conditions in early winter, when measured by this apparatus, was found to be greater, according to body weight, than that produced by a man working at hard manual labor, considering the fact that the work was done by only a relatively few of the bees of the cluster. According to this, the energy produced by a colony in the height of a honey flow must be tremendous for the body weight involved when compared with higher forms of animals.

We understand this bulletin is for sale by the Superintendent of Documents for five cents, cash or money order, stamps not being accepted for bulletins.

Some Peculiarities of European Foul Brood.

IN THIS issue are articles by W. J. Sheppard, Arthur C. Miller and J. L. Byer on the Lewis treatment for European foul brood. The reader will note the difference in the attitude of Mr. Miller and Mr. Byer regarding the destructiveness of this disease and the importance of elaborate treatment.

Mr. Byer sees no need of fussing with drugs, which involves shaking the bees from their combs once a week in order that the combs may be sprayed with a solution of sodium hyperchlorite to control this disease, when under his conditions the bees are able largely to control it themselves. As he says he looks upon European foul brood with ''comparative contempt.''

On the other hand, Mr. Miller is enthusiastic about the drug treatment. He mentions the ''virulent type'' of European foul brood prevalent in his locality, which the ordinary treatments for this disease do not cure. Both of these men have been thru the mill with European foul brood, but they emerge with quite different views in regard to treatment.

Mr. Byer is located in the midst of the clover region of Ontario where the stimulation of the comparatively early honey flow from clover causes strong colonies of vigorous bees to clean out the dead larvae so thoroughly that the disease is not able to make much progress. If it does get the start of certain colonies, doubtless 10 days of queenlessness and then requeening with a young queen of resistant stock will usually enable the bees to clean up the trouble.

Mr. Miller in Rhode Island is outside of the clover region proper where the early honey flow is not dependable, and where the bees can not be depended upon to clean out the dead larvae so promptly or so thoroughly. One man, because of his stock, management and location, is able to look upon European foul brood with contempt; while another, because of the difference in his locality, is compelled to go to a lot of trouble to keep the disease under control.

The so-called ''virulent type'' of European foul brood does not, however, entirely stay out of the clover region or regions having a dependable early honey flow. On several occasions the Editor has seen it appear suddenly in all its glory in clover localities, but these were seasons when the clover failed. Even then its virulence depended largely upon the stock and management.

In any region having a strong dependable early honey flow, beekeepers who have good stock and so manage that their colonies are rousing strong early in the spring will not need to bother with drugs to control European foul brood, nor will they need to destroy the combs. In regions where nature fails to co-operate in furnishing a good honey flow at the critical time the problem is quite different, but rousing strong colonies of good stock go a long way even there. When these fail and requeening after a period of queenlessness fails, as in Mr. Miller's case, something else must be done. Perhaps the drug treatment is the answer as to what this should be.

In regard to the Stewart gasoline treatment for American foul brood, mentioned by Mr. Byer, beekeepers can well afford to let the federal and state experts do the experimenting along this line, at least the first season.

THE CALIFORNIA ORANGE FLOW

Great Colony Strength, the Maintenance Thereof and Abundant Storing Space Are Vital Factors

By M. C. Richter

Out in California when weather conditions are favorable at the time of the bloom of the orange trees, thousands upon thousands of these beautiful trees, laden with their fragrant blossoms, pour out literally tons of nectar daily. At such times the nectar is often so abundant in the orange blossoms that men working among the trees sometimes find their clothing sticky with nectar that has dropped on them when the branches were shaken. If all of this nectar could be gathered and made into honey, it would require scores of trains to haul it to market. In this the first of a series of articles dealing with California conditions, Mr. Richter tells how to get the most out of an orange-blossom honey flow. This series of articles will be invaluable to California beekeepers as well as others. Eastern beekeepers who are located in the clover region will note the similarity of the problems involved in securing a crop of orange-blossom honey and clover honey, the problems of securing a large force of bees early in the spring, the control of swarming and the supering being almost identical in the two regions.—Editor.

THE fact that orange bloom can produce nectar in commercial quantities was hardly recognized 15 years ago. Heretofore the sole usefulness of the orange as a source of nectar was, supposedly, that of stimulating the bees to breeding up and becoming strong. Its potential power as a nectar-secreter was lost sight of, owing to the fact that its blooming period was early and at a time when most colonies were too weak to store much surplus. During the past decade good beekeeping has demonstrated that colonies can be made strong enough to gather orange honey in commercial quantities. At the present time, according to the character of the flow and the skill of the beekeeper, average colony productions usually amount to from 40 to 250 pounds, and orange-blossom honey ranks among the three main honey sources of the state.

The Orange Locations of the State.

Southern California produces nearly three-fifths of the state's orange crops; but central and northern California are rapidly increasing their production, and today Tulare is the banner orange county, leading Riverside by more than 200,000 bearing trees. The five leading localities are as follows: (1) The area enclosed in and adjacent to a triangle drawn thru Pasadena, Redlands and Santa Ana; (2) the eastern foothills of Tulare County (Lindsay, Porterville and a new section known as the Terra Bella District; (3) Ventura and Santa Barbara counties; (4) San Diego County, (5) Butte County. There are many other small, but promising districts in central and northern California, notably in Kern, Sacramento (Fair Oaks) and Placer Counties.

Conditions Under Which Nectar Is Secreted.

The period of nectar-secretion is most variable and dependent upon several factors, especially climatic ones over which the beekeeper has practically no control. It should be mentioned, however, that the best cultural conditions under which an orange

At times there is so much swarming during the orange flow that some beekeepers find it profitable to get increase by means of decoy hives.

grove is kept will prove conducive to greater nectar-secretion. In other words, if an orange tree be supplied with the best conditions for its growth and reproduction, such as most suitable soil, proper retention of moisture in the soil, sheltered location protected from climatic extremes, and the like, the orange tree then will be found to be thriving under its most favorable conditions and will give forth a greater abundance of nectar. It should also be added that the recent research work of Dr. E. F. Phillips shows that the orange as well as all other plant life secretes better at higher altitudes and higher latitudes. Consequently, Riverside, San Bernardino and northern California territory are very favorable locations. Blooming in April at a time when there is much inclement weather, the orange flow is necessarily irregular. Its duration may be but 10 days or it may extend over a period of about a month. At times it may be exceedingly rapid, and the intake of nectar may reach 15 to 20 or more pounds daily for several days at a time. When such is the case the nights are comparatively cool and are followed by fine warm days with temperatures reaching as high as 85° to 95°F.

Significance of an Orange Location.

Aside from affording a fairly constant amount of a fine quality of easily marketable honey, the orange flow, as has been pointed out, comes early and is of comparatively short duration. It is evident from this fact that but few yards are kept permanently on a purely orange location. The flow is over during the fore part of May, the colonies are strong, and there are several other sources of nectar available in other parts. The orange flow is a flow utilized principally by the migratory beekeeper, and the successful migratory beekeeper is well grounded in the fundamental principles of his profession.

It is a well-known fact that a colony that has been made fit for a honey flow has consumed from 50 to 75 pounds of honey or its equivalent in a sugar-syrup feed or in incoming nectar, and that the colony, if properly handled during the short orange flow, may be utilized again with its strength unimpaired for another flow. The great saving in the cost of preparing a colony for a honey flow is at once apparent. The important consideration to bear in mind, when moving from one source of nectar to another, is to move before the first flow of nectar has entirely ceased. In other words, move at the first signs of a waning flow or when the daily intake of nectar per colony has decreased to only 2 or 3 pounds. Very often at this stage there is a slight inclination to rob, which at once is a sign that the bees should be on the move. It is better to move at such a time, even tho the next honey flow has not yet commenced. A decreasing honey flow, especially if it be abrupt, is a sign for the queen to stop laying and for the bees to fill up the brood-nest with honey.

Preparation of Colonies for Flow.

Orthodox beekeeping tells us that, in order to prepare a colony for the orange or any other early honey flow, it should have produced the fall before at least 15,000 young workers or, to put it more specifically, there should be three full Langstroth combs or the equivalent thereof filled with brood during the fall, so that the young bees resulting therefrom may go into the quiescent stage during winter. It is these 15,000 workers or three pounds of bees reared usually during September that, so to speak, vitalize the colony and make it possible to increase its working force up to from 50,000 to 75,000 by the beginning of April. Orthodox teaching likewise says that there should be in the colony a queen of the current year's raising. If there be a fall honey flow, no difficulty is experienced in procuring the 15,000 young bees. If, however, the honey flow is over in early summer and migratory beekeeping is not practiced, then it is advised to requeen during the fall. This should be done early enough so as to have the queen laying at least six weeks before the quiescent period. Stores to the amount of 50 pounds more or less are necessary, dependent largely upon what nectar the bees might find during February and March, and to a less extent to what protection the colony has received during winter and the building-up period. Some sort of winter and early spring protection, either by means of packing paper (see October issue of this journal for last year) or windbreaks, is a factor that absolutely should not be disregarded.

Every year colonies of bees are brought into the California orange groves.

The all-worker-comb-excluderless-two-story hive is the proper home for a colony during the late fall, winter and early spring months. In this state the quality and the distribution of stores in the two hive-bodies and their bearing on cleansing flights and empty cells for clustering space are of but little importance. But owing to the greater activity of bees during the above periods, California must lay more stress on abundant stores. Inferior stores, such as honeydew honey, are consumed in greater quantities, owing to the larger amount of indigestible matter contained therein. Colonies, prepared as outlined above, need practically no attention until the flow begins.

Moving to the Oranges.

Migratory beekeepers know that moving is expensive and that it costs no more to transport a prepared than it does an unprepared colony to a flow. They know, too, that the best time to move to a flow is not a few days before it starts, but just at the time that it opens. If the colony to be moved had not been prepared the fall before, it will more than likely lack the 50,000 to 75,000 workers and likewise a good-sized broodnest of emerging bees. It will be necessary, then, to make up colonies of required strength by either uniting or by the utilization of frames of emerging brood from weaker colonies. Before moving, each two-story colony should have at least 10 to 15 pounds of bees and several frames of well-sealed brood. In addition to this they should have 10 pounds of stores. To make up colonies is a very costly procedure. It shows that a good deal of wasted time has been spent on weak colonies, and that a certain amount of bees and bee equipment is lying idle at a time when it might be very useful.

Colony Manipulation During Orange Flow.

There are two important considerations here: first, maintaining intact the working force of each colony; and, secondly, providing at all times sufficient storage capacity for incoming nectar. The former consideration is, of course, to prevent the issuance of a swarm, and the procedure is as follows: Put the queen in the brood-chamber with one frame of unsealed brood in the center (having first destroyed all queen-cells), and then fill out with empty worker comb, if the colony is to be used for a honey flow other than the orange. If the orange is the only source of nectar for the season, then substitute an empty comb for the comb of brood and frames of foundation for the frames of comb. This will considerably retard the production of bees at a time when they are not needed. A queen-excluder is next placed over the brood-chamber, and then two full-depth supers of empty comb (spaced eight to a ten-frame body or seven to an eight-frame body, as the case may be) are placed over the excluder. If the colony had but ten frames containing brood then these are placed in a super which is put above the two supers of empty comb, taking care to remove any queen-cells that may be found. However, the colonies should have from 12 to 18 frames containing brood at this time or at a time when the colonies have reached their peak in brood rearing, and if such be the case there will be two hive-bodies containing brood to be placed above the two bodies containing empty comb. The frames of brood should be spaced nine to a ten-frame super, filling the top super full of brood, with sealed brood on the outside, and the remaining brood in the center of the story below.

This plan, for all practical purposes, prevents swarming and, in fact, is a plan whereby artificial swarming has been practiced. It is important that two supers of drawn comb be between the queen and the emerging brood above. It is not necessary to destroy any queen-cells that may be started on the brood after it has been placed above. This method of swarm control must be put into practice only when the colony is strong and on the point of swarming.

The second consideration, namely, that of sufficient storage space, regulates, as it were, the orange crop. At the onset of the flow, after the colonies have been treated for swarming, they are normally five stories high. The two top stories when they were placed above, besides containing the brood, held also considerable honey, and, as the flow progresses and the brood emerges, these are the first to be filled with honey. In the meantime the two empty supers below are serving a twofold purpose in that they prevent swarming and provide ample space for rapid intakes of nectar. These two supers act as safety reservoirs, and the greater the honey flow, the more thin nectar or unripe honey will these reservoirs contain. Should the intake for any certain day amount to some 20 pounds, one super of empty combs is none too large to be filled with this thin nectar, which is spread out in every cell of the eight combs. Two or three such days of rapid nectar-secretion may mean the addition of one or two extra supers of comb, and whenever extra supers are needed they should be placed immediately above the excluder. Thruout the honey flow always watch the super just above the excluder, and as it fills up slip an empty one between it and the excluder. Even if the colony mounts to seven stories high, there is no other way in which a strong colony can handle all of the nectar which it has the ability to gather.

Orange blossoms. Sweet as they are beautiful.

Modesto, Calif.

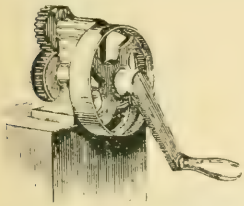
WOOD BASE FOUNDATION

Is This the Solution of the Long Standing Problem of Durable Non Sagging Combs?

By H. H. Root

THE securing of nearly perfect combs, that will stand the heat of the summer without sagging or breaking, is a problem nearly as old as beekeeping itself. In the days of the box hive, beekeepers fastened wooden sticks about one-half inch in diameter thru the middle of the hive to support the combs, these sticks running horizontally in different directions thus crossing each other.

After Langstroth first brought out the movable-frame hive in 1853, both he and Quinby tried out wooden bars running thru the middle of the frame either vertically or horizontally to help support the combs, as well as furnish winter passageways thru the combs. Quinby reported that without such supports he had trouble from combs heavy with honey breaking down in hot weather.



Crimping machine used by Moses Quinby in 1870 for making the cells of his metal combs.

Working further on this problem in 1870, Quinby made metal combs quite similar to the metal combs now being tried out again in this country and in England. To make these metal combs Quinby built a machine to crimp the thin tin strips which were used in building up these artificial combs. From the accompanying illustrations, taken from a revised edition of Quinby's book, it will be seen that these metal combs, made more than 50 years ago, were assembled in almost exactly the same way as the aluminum combs of today, the difference being that the cells on each side of the septum were made up separately and attached to the sheets of tin which formed the septum. This is the principle now used in England in manufacturing the "Semi-Comb." The aluminum combs made in the United States have a septum incorporated in the strips of metal by the manner in which the metal is crimped, so that the cells on both sides, as well as the septum, are assembled at once.

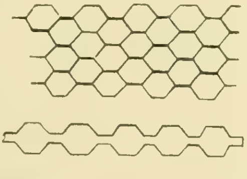


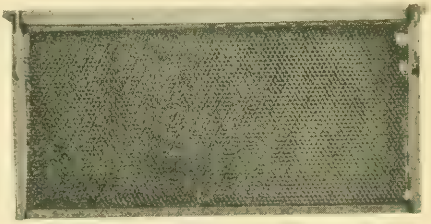
Diagram showing how the crimped metal was placed together by Quinby to form the metal combs.

In the early days of comb foundation, which came into use in this country in 1876, A. I. Root conducted many experiments to strengthen combs to prevent sagging or breaking out in the extractor. In these experiments he tried imbedding cloth, paper, wood veneer and other material within the foundation, but gave up all of these in favor of wires stretched thru the frames similar to the way this is done today, except that he used vertical wires together with a support made of folded tin in the middle of the frame.

Dr. Miller used small wooden splints, which were impregnated with hot wax and imbedded in the foundation vertically, to strengthen and support the comb. While these prevent the sagging of the combs they do not strengthen them sufficiently for the rough use they usually receive in the extractor.

Different Methods of Wiring Frames.

If there is a form of wiring a frame that we have not tried, it is a form that none have thought of. We have tested every conceivable form of horizontal wiring; we have tried vertical wiring—five, seven and nine vertical strands—and we have tried a combination of the two, both horizontal and vertical. For two seasons we have been using what is known as the California plan. In addition to the four horizontal wires, a diagonal wire extends from the bottom of one end-bar, up across two tacks in the top-bar and down to the bottom of the other end-bar, the end-bars being notched to permit the diagonal wiring. This plan makes a much stronger comb; but, unless all the wires are perfectly imbedded, deformed or drone cells are formed at the intersections. We have tried again the tin stays that A. I. Root used years ago, as well as the vertical wood splints advocated by Dr. Miller.



Foundation with wire cloth incorporated in the base. This has not proved successful.

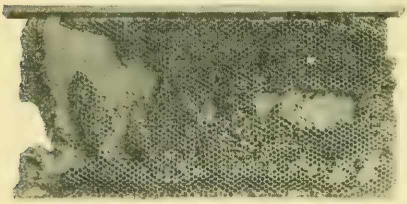
Some of these plans are good so far as the prevention of stretching and consequent building of drone comb are concerned, but in none of them are combined all the good qualities that should prevail in a durable comb.

Two years ago we began experimenting

with combs having as a base some material other than wax, which would stiffen the wax and prevent distortion of the cell and breaking of the comb in the high-speed extractor.

Wire Cloth.

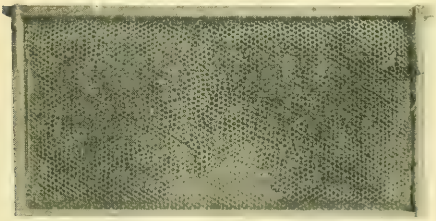
Foundation having wire cloth incorporated in the base has a very attractive appearance and the bees draw out the cells nicely. There is not enough metal to conduct the heat to or from the brood, and, of course, such combs will not stretch or sag, provided the wire cloth is firmly fastened to the frames. This, however, is a difficult achievement, and the expense and labor necessitated in securing to the frames foundation with a wire-cloth base are quite an objection.



Foundation having a base of tough Bristol board. Combs built on such foundation are universally unsatisfactory.

Celluloid.

About three years ago we made some foundation with a celluloid base, coating some old roll film photographic negatives with wax and running them thru the mill. The celluloid yields just enough in the pressure of the mill so that the base is quite natural. The combs built from such foundation do not sag, but the celluloid has an unfortunate tendency to spring out and in, like the bottom of an oil can, throwing the midrib to one side or other of the center of the frame. Moreover, celluloid after a time dries out and becomes very brittle. We fear that breakage would ultimately result in the extractor.



The early attempts in making wood-base foundation were not a success. Note above the irregular cells and drone-cells, a result of insufficient cell wall.

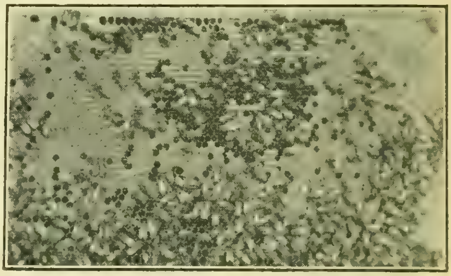
Paper and Bristol Board.

In spite of the early experiments of A. I. Root we next tried hard cardboard and even bristol board, the latter being so hard and tough that it could hardly be cut with a knife. Both these materials are objectionable in that, because of being fibrous, the bees gnaw the wax off and then proceed to gnaw the paper. In the moisture of the hive or when thin honey is placed in the cells, the paper also tends to blister, so that the combs in a short time are entirely unfit for use.

We have not tried any kind of cloth, because A. I. Root's early experiences with this were so convincing; furthermore, others who have tried the cloth since have found the same trouble—the bees consider it a foreign substance and proceed to gnaw it away.

Bakelite.

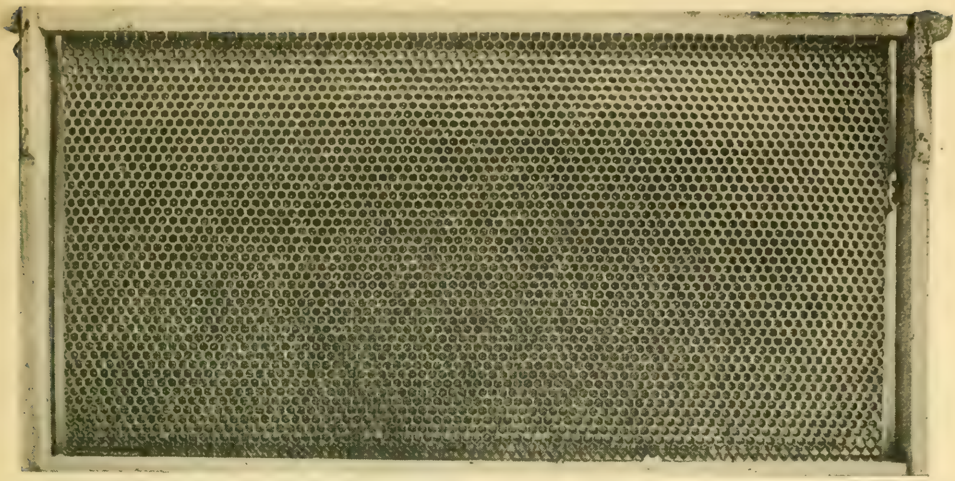
To a limited extent we have tried foundation with a bakelite base. Bakelite is a material which is used quite extensively in a number of ways, one of the most common uses being for pipe stems. For making foundation the bakelite can be obtained in very thin sheets with a cloth center. The bakelite renders the cloth very hard and smooth with a glass-like surface. While our experiments are not conclusive as yet, we fear that the expense of this material will be an objection; also that its odor of carbolic acid will prove offensive to the bees.



This wood-base comb was one of a full set on which, fifteen months prior to the time the picture was taken, a swarm had been hived. The colony built up to full strength, wintered well in 1920-1921 and appears to be normal in every respect today. Note the brood close to the top-bar.

Wood Base Foundation.

The foundation that has given us by far the best results is that having a base of thin wood veneer with the grain running vertically. We hived a weak colony on such foundation in the spring of 1920. The colony built up nicely, wintered well in 1920-1921 and seemed to be normal in every respect last season. Brood was reared close to the top-bars. In fact, we have seen sealed brood in the row of cells adjoining the top-bar. There is, of course, no possibility of sagging or stretching, and the cells are not deformed in the upper part of the combs; therefore the brood area is greatly enlarged. Thin



A representative comb from the latest pattern wood-base foundation having the cell walls clearly defined. There are no more imperfect cells than would be found in case of combs built on regular foundation. This comb is one of twenty built during a goldenrod honey flow in September, 1921, by twenty different colonies. There are some irregular cells next to the top-bar because by an oversight the cells were not not clearly defined on the wood base clear to the top-bar.

top-bars and bottom-bars are possible, for, of course, the wood veneer makes the frames very strong.

Early in the season of 1921 we tried wood veneer only 1/40 of an inch thick. We found that this, however, has a tendency to wrinkle in the hive, so that the combs have a corrugated appearance.

We first nailed the wood veneer solidly in the frames, but we found that unless there is room for some expansion and contraction from one end-bar to the other, the wood veneer even 1/20 of an inch thick has a tendency to warp. We now support the wood veneer by nailing in the center only, and we also saturate the fiber with waterproofing material, so that the wood will be little effected by atmospheric changes.

When we first started making the wood-base foundation we supposed that an impression of the base only would answer, and we made no effort to secure a good wall of the cell. The bees paid very little attention to the original base and constructed worker or drone cells as suited their convenience. Moreover, in some instances they seemed to

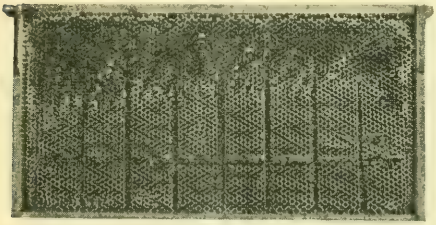
Sealed honey in a comb built from wood-base foundation. Such a comb could be dropped on the floor without danger of breaking. The honey extends not only to the thin top-bar but also clear to the bottom-bar.

think that the wood base was the capping of the comb, and they constructed queer bridging effects and irregularities making the combs quite unfit for use.

As soon as we secured wood-base foundation with a well-defined cell wall we found that the bees built straight worker combs without showing the slightest tendency to make deformed or drone cells. In September, 1921, during a goldenrod honey flow we selected 20 different colonies, removed two full combs from each, and on one side of each brood-nest we put a thin top-bar frame with wood-base foundation, and on the other side an ordinary frame with the regular foundation, these frames in each case being placed between the outside comb of brood and combs of honey. In 48 hours all the foundation was drawn out. We could see very little difference between the wood base and the regular, so far as the progress of the work was concerned. There were no defective cells drawn from the wood-base foundation, and the twenty combs were as nearly perfect as any we have ever seen.

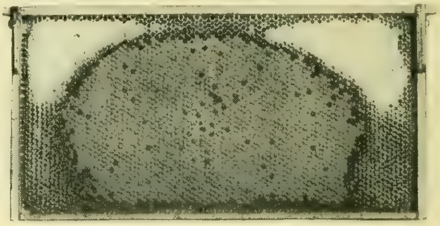
The wood-base comb is as smooth as a board, tho occasionally a comb shows a slight curve because of the warping of the wood veneer. We now believe that waterproofing the pores of the wood overcomes even this occasional defect.

The wood is about as good a non-conductor of heat as wax. We find no tendency for the queens to shun wood-base combs after July 15, as they have done in the case of the metal combs in our locality. In fact, so far as we can tell now, the bees rear brood in the wood-base combs just as readily as in the combs built from regular foundation. The advantage of the thin top-bar will be recognized as one of the greatest importance, and, since the wood-base foundation extends down between the halves of the split bottom-bar, the comb is built solid to the bottom-bar. In this way the capacity of the comb is considerably increased.



The result of extracting the honey from wood-base comb without a screen in the pocket of the extractor. The comb stood the strain all right, but the wax cells crushed into the braces of the pockets. This experiment was merely to test the strength of the comb.

I am not prepared to say that a swarm hived on a full set of frames containing wood-base foundation will build a full set of perfect combs. We have demonstrated that good combs result when the wood-base foundation is drawn out between combs of sealed brood or honey. Of course, that is the best way to get a perfect comb even from regular foundation. It is needless to mention here that, if wood-base foundation is given to the bees at a time when they are not building combs, the results are no better than if ordinary foundation were given at such a time. While we have found no particular tendency to gnaw the wax off the wood, we believe this is what would happen under such circumstances. In fact, whenever bees would gnaw regular foundation we think they would gnaw the wax off the wood base. Any kind of foundation should be given only when the bees soon will be or actually are building combs.



A typical wood-base comb containing brood in all stages and honey. Tho not shown in the illustration, the unsealed brood extends practically to the bottom-bar.

Wood-base foundation does not entirely prevent the building of a few cells of drone comb, for when any portion of the comb is mutilated, the bees in repairing it will build drone-cells, if the colony is strong and prosperous, just as they do when ordinary foundation is used.

The question might logically be asked whether the flat base is as acceptable to the bees as the pointed base of natural comb. Apparently the bees try to point the base; but, finding they cannot, they seem to pay no more attention to this feature; at least the wood-base comb is built about as quickly as is a comb from regular foundation. The base of the metal comb is not natural; but, since the bees cannot change it, they waste no time on it. The same is true, so far as we can tell, in case of the wood-base combs. The old flat base foundation used years ago was modified by the bees to a natural base. Because they cannot do this in the metal combs nor in wood-base combs, very sensibly they waste no time over it.

Tho we have tested hundreds of these combs, wood-base foundation has not yet proven to our satisfaction that it is perfect. I can merely say that, so far, it promises to be the logical answer to the problem that has troubled beekeepers for 50 years—the problem of securing perfect and durable combs.

SOME DANGEROUS ADVICE

Lewis Treatment and Stewart Treatment for the Brood Diseases Handled Without Gloves

By J. L. Byer

BROOD diseases among bees is a subject that most beekeepers would like to be able to dismiss from their minds; but even if the subject is an unpleasant one, sad experience teaches us that no such pleasant prospects are possible for a long time to come, to say the least, and, as in the case of many other pests that afflict almost all kinds of rural industries, "eternal vigilance" is the only thing that will keep us from going under in the fight with this age-old enemy of the bee industry.

True there are some who contend that we are gradually gaining in this fight, and that it is only a matter of time before foul brood will be almost, if not altogether, wiped out; yet I for one have no such hopes. I fully believe that this disease will be here to fight, just as long as this present generation of the genus homo remains here on terra firma, and that is about as far ahead as the most of us care to speculate, so far as earthly matters are concerned. Only recently I had first-hand information that large commercial beekeepers in a near-by state were being forced to give up producing extracted honey on account of the prevalence of American foul brood; so I judge that other sections, as well as Ontario, look upon foul brood as still being the chief menace to successful beekeeping.

The curse of the disease does not merely consist of loss from the actual destruction of colonies, but in many other ways as well. We have a slight sprinkling of American foul brood in two of our three beekeeping centers, and I have often remarked that, even if disease is known to exist near our yards, the work of the apiary is increased at least twofold.

When looking for queens in the annual overhauling of the colonies during fruit bloom, if the operator is examining for traces of disease at the same time he is supposed to be looking for queens, it is surprising how many queens he will overlook, as compared with working in an apiary where he is reasonably sure no disease is near, and consequently is able to concentrate all his attention in looking for the queen. In forming nuclei in a rush of work, time must be taken to examine every comb thoroly, if he wishes to be really safe against the possibility of breaking up those same nuclei later in the season.

And so these items could be multiplied indefinitely, but all beekeepers who have had much experience in keeping bees in a locality where foul brood is present know all about this matter already.

The Lewis Foul Brood Cure.

But my attention was directed to this subject, this evening, by an article in a recent issue of the American Bee Journal, relative to the new cure for foul brood, (both kinds evidently) that is being heralded by some of our friends in British Columbia. A drug with various names, some of them very lengthy, is sprayed over all the surface of the combs, and this, it is claimed, kills all the germs, spores, bacilli or whatever else causes the disease. Our genial but generally very critical friend, A. C. Miller, reports that he has tried it with European foul brood with such success that the disease now has no terrors for him. As the drug solution kills all the eggs in the combs, possibly all the young larvae too, I am forced to wonder why friend Miller has jumped to the conclusion that the cure was caused by the drugs, for a cessation of brood-rearing will generally stop the further development of European foul brood in strong colonies, as many of us have proved conclusively.

Only a few years ago we were panicky here in York County as to the ravages of European foul brood, and I frankly admit that for a time it looked as tho we were going to be put out of business. Altho we do not know what is ahead of us, yet we now look upon this disease with comparative contempt; while, on the other hand, the old brand of American foul brood is still giving us trouble in some sections more than at any other time. A few neglected colonies in a back yard, diseased, later on dead, and then all robbed out, will give a commercial beekeeper worry and trouble altogether out of proportion to the value of all the offending colonies.

Aside from the possible benefits of drugs as applied to the combs, so far as combating disease is concerned, the method of treatment would be mussy and highly dangerous to other colonies, all combs having to be handled individually while being sprayed on both sides. The bees are all driven out of the hive during the treatment, I understand, and please conjure in your minds just what that would mean unless all colonies were taken away to some place where there were no healthy colonies present.

The Stewart Foul Brood Cure.

But if you must use drugs for treating American foul brood, why not try the following remedy (printed on a card) as it is most simple and every one can get the drug recommended in this case:

HOW I HANDLE AMERICAN FOUL BROOD.

After dark quietly pick up the diseased hive and without disturbing the bees carry it into the shop, from which let the bees go out thru a bee-escape in a window. Authorities tell us that a bee carries no honey when leaving its hive voluntarily, and bee

> keepers know that any bee can enter any hive it wants to when there is no attempt to force it in. When the bees are all out of the hive uncap every cell in the combs. If there is any honey in the corners of the combs, scrape those parts down to the septum and wash out the honey. Then stand the combs in gasoline for two minutes. For that purpose a can four inches by ten inches by two feet high is convenient and economical in the use of gasoline. Put the frames in the extractor and throw out the gasoline. Stand them a second time in the gasoline for another two minutes, but do not again put them in the extractor. Simply shake out what you can and hang the combs in the supers. When the gasoline has evaporated use the combs any place with safety. This treatment will also kill moths and their eggs.
>
> This is much better than the shaking method, for any beekeeper knows that when we shake bees many of them crawl into the clothing, and it is possible that those who have authority to inspect and shake bees thus scatter more disease than they eradicate as a result of the shaking treatment. Disease-laden bees may thus be carried long distances into localities where there is no disease, and when one of them leaves the clothing and enters a hive the owner at once has American foul brood in his bees.
>
> These ideas are for beekeepers who do their own thinking. W. H. H. Stewart.
>
> Emerson, Ill.

During the past two months I have received a dozen or more cards containing the above directions for handling American foul brood, and as the Editor will see on the address side, I am asked to "distribute" these messages for the benefit of other beekeepers. Not having ever tried out the plan here given, I should not be too emphatic in my judgment; but if an opinion is asked as to what I think about it, I will say that it appears to me that the circulation of such advice thru the country, at a time when thousands of dollars are being spent to fight American foul brood, should be treated as objectionable matter by the postal authorities. If I am wrong, I am ready to be corrected; but when one thinks of soaking the combs in gasoline twice, and running them thru the extractor, with all the attendant nastiness that goes with the mess of foul and healthy larvae together when thrown out in the process, and all for what—simply to save a few combs—that is enough to condemn the plan if there were no other objections. Then again, I do not believe that combs filled with dried-down scales would be free from the disease.

Markham, Ontario.

WINTER PROTECTION in the WEST

Lack of Uniform Results From Packing. Can Colonies be Too Strong for Best Wintering?

By E. F. Atwater

THE practical results of the research done by Dr. Phillips and Mr. Demuth on the essentials of the most successful and economical wintering are unquestionably saving the beekeepers of this country many times the total yearly cost of the Division of Apiculture of the Bureau of Entomology at Washington; yet, strange to say, there is a vast area where beekeeping is growing rapidly, in which the beekeepers are skeptical as to the benefits of heavy packing outweighing the heavy expense and labor involved. Results of such packing in the great arid West, even tho winter temperatures may for short periods approximate those of Ohio or even more northerly states, require careful interpretation and more extended study.

Certain it is, that in practically the entire arid region bees winter, as a rule, with little or none of the careful and painstaking care required further east. For instance, while my old A B C book says that even a slight direct draft upward thru the hive may cause the loss of colonies; here colonies in hives, so open that they act merely as imperfect windbreaks, usually winter nicely, regardless of the extremes of temperature.

One man, an educator of experience, whom I have heard describe his results of heavy packing, packed a number of colonies even more thoroly than advocated. In some of these colonies, the saving in stores and other advantages were exactly as anticipated, while other colonies, even in the same packing cases, consumed all their abundant food supply by early spring, and had to be fed.

My own limited experiments have not been very satisfactory. While the saving in stores, in some of the colonies, was exactly as represented, the colonies showed no considerable advantage in early brood-rearing, nor in honey production. In fact, some unpacked colonies were much better.

Were the Entrances Too Small?

It is quite possible that the excessive consumption of stores, in some colonies, may be due to packing too early, leaving packing on too late in the spring, or, more probably, to the very small entrances used, usually about ⅜ by 1½ or ⅜ by 2 inches. After packing, almost the entire population of big two-story colonies would be clustered on the outside, often for days at a time; then in April again this excessive clustering out occurred; and on examination some time later, stores were found scanty in some, and more or less brood appeared to have been overheated, with not many bees in the hives to do the necessary work of the spring breeding period. The condition of chaff hives, each containing two colonies with only a thin partition between the two, and a little less than two inches of packing material at the sides and about eight inches above, was much better, even with entrances equally small. The waste of energy in sending air currents thru the small entrance must be excessive on warm days in the spring.

If the results claimed for heavy winter packing may be attained by enlarging the entrances, except during the coldest weather, are there not still some conditions present in many localities, which may render of doubtful value the packing or wintering of enormous colonies?

When Colonies May Be Too Strong in Spring.

The old golden rule of beekeeping, "Keep your colonies always strong," is as good advice now as in the past, but I am almost satisfied that I have wintered tons of bees that were of no value to me some years, making considerable feeding necessary and probably not adding to my crop of surplus honey.

Colonies run for extracted honey and having a large number of young bees, a young queen and a fairly good late flow of honey, go into winter with a very large force of bees, many of which are quite old. Even without protection, these colonies usually winter quite well; then during dandelion and fruit bloom, they rear a relatively large amount of brood, to be followed by a period when there is usually very little nectar to be had. During the two to four lean weeks, there is too often a real difficulty in getting the queens to lay freely and make any considerable increase in the amount of brood reared. Colonies are sometimes weaker when the honey flow arrives than they were in early May.

The comb-honey man, with his brood-chamber honey-bound late in the fall and usually smaller colonies, winters very well; and, as there is not the big force to rush early brood-rearing, it is probably easier to get that steadily increasing amount of brood up to our June honey flow, which is so desirable. If a large increase is desired, that is another matter. It will then pay to winter a large force of bees, and make quite an increase during fruit bloom.

As to whether or not packing is desirable, it appears to me that in some localities there may be some things that the producer of extracted honey may do to advantage with very strong colonies late in the season. Another season I shall test some of these fully; I would have done so this year but for my absence from home nearly one-third of the season.

Eliminating Old Bees in the Fall.

Possibly one of the simplest plans to eliminate a lot of the old worthless bees is to set out several robber traps about the time that brood-rearing ceases, and, after the bees are robbing to some extent on a few combs of honey, trap all robbers for a day or two. It is said that there is a surprising comfort in equalizing stores and preparing such a yard for winter, free from the annoyance of countless robbers.

By eliminating most of the old robber bees it is highly probable that the spread of foul brood may be reduced very greatly, and it it not impossible that, in all localities where there is much foul brood, trapping of the robbers in all commercial apiaries may be the greatest means for disease control during the fall months.

Another plan, which may be successful, is to close the entrance of each very strong colony for a day or two, so no bees can get into the hives, yet all desiring to do so may get out thru a simple escape. Early in the morning, a day or two later, the clusters of old bees may be scraped into a can and destroyed. Another plan, used by some, is to remove the strong colonies a short distance, and place empty hives, with a comb or two, in their places, to catch the returning old bees. Possibly other methods, which may be much better, may be devised for getting rid of these old bees.

When living in S. Dakota, I was told that Daniel Danielson, now of Brush, Colo., had divided colonies in such a way, late in the season, as to secure about all the old bees in one hive, and most of the young bees in another, and even tho cellar-wintered the colony made up of old bees died. Geo. A. Emerson of California, for years an extensive producer, tells me that even there some study is being made, and apparently with considerable success, of methods of eliminating the old bees in the fall; and I think it possible that in many localities it may pay well to do so, where there is sufficient time for medium-sized colonies to breed up for the honey flow and where but little increase is desired. Where one winters, year after year, a host of non-producers, there is a waste of tons of honey, that the producer, from what I have seen of him in several states, can ill afford to lose.

I shall expect this article to bring forth considerable criticism from sentimentalists with their heads in the clouds, on the ground of alleged cruelty in destroying these worse than useless consumers; but many of these same men are not above extracting so closely that countless numbers of colonies starve to death in winter, or moving bees with so little ventilation that they fairly scream for air and liberty. The plans suggested only shorten somewhat the lives of some of the bees, and, in my opinion, they are fully as justifiable as any taking of life of other animals that man may live.

If there is a possible gain in your locality, with your conditions, by wintering medium-sized colonies of young bees, eliminating most of the old ones, packed or unpacked as your climate demands, then let us work out the methods necessary, and save the tons of honey now wasted by the useless consumers, and by so doing put our business on a better paying basis.

Meridian, Idaho.

FROM THE FIELD OF EXPERIENCE

THE LEWIS FOUL BROOD CURE

One Beekeeper Tells How to Make the Solution. Another How to Use It

Please allow me to say that I think the presentment of the Lewis treatment in the November number of Gleanings could not have been improved upon, and will have the effect of setting the ball rolling right.

It cannot be too clearly understood that we have stated the case, and given out the results, just as we found them in British Columbia, without any attempt at exaggeration, and entirely for the benefit of the beekeeping fraternity. It is now up to everyone to test the treatment for themselves.

For the benefit of those who may be unable to obtain either B-K or Fecto, it may be stated that sodium hypochlorite, of approximately the same strength as is contained in these two proprietary preparations, can be made as follows:

Dissolve six pounds of sal soda in two gallons of hot water, and three pounds of chloride of lime in one gallon of cold water. Pour together and allow to settle. The clear mixture, at the rate of eight ounces to the imperial gallon of water, is ready for use.

The solution should be made with hot water, at near boiling point, so as to avoid chilling the brood when it is used. A pint of solution will be about sufficient for one spraying for each hive, if a fine mist sprayer is used. Sodium hypochlorite soon deteriorates if it is not kept well corked and in a dark place. W. J. Sheppard.

Nelson, B. C.

Sodium hypochlorite is a very powerful destroyer of bacteria. It was the famous ''Dakin Solution'' of the war. It is quite harmless to drink, and in fact surgeons in the war have told me that they had to use it in their drinking water when the water could not be sterilized by boiling. It is not particularly pleasant to the taste, but one soon gets used to it. Its efficacy as a bactericide is due to chlorine gas it contains.

Mr. Lewis first used a proprietary article sold under sundry names. I was unable to find any of them here, and on making a few inquiries I learned what the commercial solution is and then made it myself. Two pounds of sal soda—common washing soda—is dissolved in two gallons of hot water. Cold water is too slow. One pound of chloride of lime is dissolved in one gallon of cold water. Hot water would free too much of the chlorine gas. It is a fine dry powder and does not readily mix with water, so it is best to stir in a little water at a time, making a sort of paste and when all is well wet stir in the rest of the water. Then mix the two solutions and let stand over night. A white precipitate is found at the bottom of a clear solution. This latter is the sodium hypochlorite and should be bottled for use. The precipitate can be thrown on the ground for fertilizer, being carbonate of lime.

So much for the material. Now for its use. It is to be sprayed all over the combs, and for this purpose a common bush sprayer costing 50 cents is just right. This throws a fine mist and does not wash larvae from the cells. It is advisable to catch the queen and cage her until thru spraying, because she often wanders out with the bees and sometimes does not find her way back. As soon as the spraying is finished and the bees have begun to spread over the combs again, she may be released and returned to the bees. In spraying, the bees are shaken from a comb and both surfaces of it are sprayed; it is returned to the hive, and each succeeding comb is thus treated. The bees will work away from the freshly sprayed combs, and soon most of them are outside the hive. They soon go back and will lick up all drops of the liquor. It is only the the gas which bothers them.

The gas penetrates every open cell and destroys all bacteria with which it comes in contact. The liquid can be used full strength; but there is no gain, and I have found half and half of the solution and water fully effective.

Now as to the results experienced by Messrs. Sheppard and Lewis in their early spring applications. At that season colonies do not readily open and clean out sealed cells, and until such cells are opened and exposed to the gas the contained bacteria are not destroyed and will readily infect healthy brood. It is necessary to repeat the spraying at intervals of about a week until all sealed cells containing dead larvae have been opened and cleaned out. Thereafter the colony stays clean unless it becomes freshly infected from outside sources.

There is a well-recognized type of European foul brood called the virulent type, prevalent here and in other parts of the country. It spreads within the colony with startling speed, and in the course of a week or so after the colony is infected 60 to 90 per cent of all larvae are dead or dying. The larvae lose all shape and ''melt'' down into a dark, shapeless, pasty mass which is tracked all over the combs and hive interior until the filth is most repulsive to the sight, and the bees make only the most feeble attempts to clean up. The queen will not use the foul or partly cleaned cells; she will seek such parts of the combs as are free

FROM THE FIELD OF EXPERIENCE

from the slimy filth and deposit eggs there, so the brood is found scattered all about the combs, presenting a very strange and unusual appearance. Such larvae as die after the cells are sealed, turn into a most unpleasant liquid.

None of the customary treatments of European foul brood have the slightest impression on the virulent type, nor have I yet found any strain of bees in the least resistant to it. According to reports from the Government the germs of the two types are the same, and so far I have been unable to discover any reason for its virulence at different times and places.

When the British Columbia inspectors sent me the particulars of the chlorine treatment I was quite as skeptical as you are, but I will try anything once and I was more than glad to hear of anything which promised to check the form of European foul brood we had here.

I followed their instructions to the letter, and after I found it was a success I began to vary the application to see if I could cut out any of the details and simplify the application. I found no advantage in the addition of oil, rather the contrary.

The eggs in the combs are often destroyed. Sometimes it seems to be the strength of the solution and sometimes the chilling; but instead of being an ill to be avoided it is on the contrary an advantage, as it is the equivalent of dequeening for three days and gives the bees a better chance to clean up. Where there are many sealed cells the spraying must be repeated at intervals until all cells are opened and cleaned. To determine this, all but two colonies of an apiary were thoroly disinfected and cleaned, and the two colonies received spray treatment until but one or two sealed cells of dead young were to be found in each comb in one hive and but three or four such cells altogether in the other colony. Then they were let alone to see what would happen. In about a fortnight both colonies were again foul with the disease. Both were fairly strong colonies of pure Italians of a strain claimed to be resistant.

I now know chlorine gas is a better ''resistant'' agent than any strain of bees. Mr. Sheppard and his associates advised heating the solution before applying it, to avoid chilling the brood. So far I have not found the heating to be of any special advantage.

Be sure and wear old clothes and old shoes when working with chlorine solution, because it is a wonderful bleaching agent and will quickly take the color out of garments or tan shoes if it drops on them. Nice tan shoes so treated, tho well spotted, are far from being like trout ''speckled beauties''—as I found out. Arthur C. Miller.

Providence, R. I.

THICK TOP BARS OBJECTIONABLE

They Reduce the Comb Surface of the Frames and Increase the Brace Comb Nuisance

Personally I have produced thousands of pounds of fancy sections built solid to the wood and scarcely a cell not capped. Very wasteful and expensive to have them finished so completely I'll admit; but exhibition rules called for it, and that, by the way, was what killed comb-honey production in Ontario. However, that is an aside; what I wish to say is that such methods would produce burr-combs if they were to be had. But we did not have burr-combs of any account, and our top-bars were only five-eighths inch deep. To me it seems superfluous to mention the depth of the top-bar in connection with burr-combs, because it has nothing to do with them. They are built only where spacing is inaccurate. They are merely a protest against inaccurate spacing. Inaccurate spacing of the comb is overcome by extending or cutting away cells. Inaccurate spacing of pieces of wood induces burr-combs in large spaces and brace-combs in spaces which are too small. Enlarging the pieces of wood without correcting the spaces between them simply increases the burr-comb nuisance by increasing the areas over which they may and will be built. The cure for burr-combs is for the manufacturer and the beekeeper to correct the spaces where they cause the most trouble. I believe the space which bees prefer is not less than a quarter nor more than five-sixteenths of an inch. With a correct bee-space there will be very few burrs and braces; but the amount of these will be in proportion to the wood surfaces available for building them, and while not much difference will be seen there are always more of them on a deep top-bar than on a shallow one.

I have not the literature available to see if I can tell how the error crept in. That it was fathered by some who have been an untold blessing to the industry in other ways should not be made an occasion for perpetuating an error. That I am not alone in the feeling of protest against the intrusion of unnecessary wood in a frame already too shallow is evident by many letters I have received objecting to so much wood. Owing largely to my teachings at short courses and demonstrations there is a rapidly growing demand in Ontario for the shallow top-bar. One manufacturer objects that on account of buying the pine all in seven-eighths inch boards he cannot save anything by making the top-bars shallow. I should think that could be overcome in some way, considering the fearful price now paid for white pine. But even if it cannot, I would rather he dressed off the extra wood and fed it to the furnace than crowd it into my brood-chambers which are already too small.

Georgetown, Ont. Morley Pettit.

* * *

HUBAM IN BRITISH COLUMBIA

Makes Growth of Thirty and One-half Inches in Twenty-one Days

Beekeepers, as a class, are not fully alive to the possibilities of improving their business thru the agency of spreading information among the farmers of their various districts concerning the new fodder plants, which are of value to the farmer as well as the beekeeper. Hubam clover is an ideal means of improving and prolonging honey flows. It is a plant of wonderful fodder and soil-enriching value to the farmers, few of whom appreciate its great worth. It is also a good honey plant. Beekeepers might with profit to their business buy seed of this clover from reliable dealers, thereby being sure of getting the correct strain of seed, and resell at cost to farmers in their district to try out. In a short time it will be fully established.

Hubam clover sown on May 1 at Vancouver, B. C.; this picture taken June 20.

If a farmer can once see this clover growing, he will be quick to recognize its great value. Here in British Columbia we do not have a great deal of cultivated crops which are of much use to the beekeeper, and in the coast district our honey flow is over in July. A general cultivation of Hubam clover here would improve and prolong our honey flow until frost. The same condition is true in many other parts of the country.

The same Hubam clover, sown on May 1, as it looked on Aug. 26.

Sweet clover is not looked upon with much favor in British Columbia, but all previous experience with it here has been with the old biennial variety, which can not be compared with the new annual.

On a trial plot here, seeded May first, Hubam clover had by July 17 made a growth of from four to five feet and was ready to bloom at that time. From July 17 to August 6, just 21 days, it made an additional growth of 30½ inches. On some of the warmer days it made a growth of two inches in 24 hours. When cut for hay or pastured it grew still more rapidly. This clover, seeded here in 1920, wintered over and was in bloom a week ahead of this year's seeding. Plots left uncut were still in bloom on October 12, and bees were at work on them eagerly.

Samples of Hubam at our local exhibition attracted a great deal of attention, and there were many inquiries regarding seed. The accompanying pictures will give some idea of Hubam's wonderful growth. The above results were obtained in trial plots under various conditions of soil preparations, some with lime and some without; but the growth was about equal in each plot.

Vancouver, B. C. W. P. Long.

SIFTINGS

J. E. Crane

THE short editorial on page 9 of the January issue of Gleanings set me to thinking of the time when I was young in beekeeping, and my bees had American foul brood, when I bought colonies of bees from a distance. I got rid of it by simply destroying the combs, without disinfecting the hives. We knew nothing of microbes in those days. A few years ago I was attending a beekeepers' convention where a learned professor told the beekeepers how they must disinfect foul-brood hives with a gasoline torch and all tools used in handling the combs, with boiling water. He did not even except their fingers. A gentleman sitting near me whispered to me and said he had used hives from which foul-brood colonies had been removed without any return of the disease. Now I am not saying that the bare walls of the hive may not carry the germs of American foul brood, but I do think the danger to be much less than generally believed.

* * *

That is a right good editorial on page 11 on the "Condensation of Moisture in Hives in Winter," and well worth a most careful study by every young beekeeper in the North. To keep bees dry and warm in winter is the secret of successful wintering, and how best to conserve heat and let the moisture escape is another way of putting it. For this we will make the brood-chamber as warm as we can, and then we will give upward insensible ventilation thru old woollen carpeting, rugs, leaves, soft planer shavings or dry sawdust, or cork dust. Such a covering will permit most of the moisture to escape while it retains the heat. With such conditions bees will winter as safely in our cold northern winters as any stock.

* * *

As I look over Gleanings for January it would seem as tho the most important question confronting the commercial beekeeper of today is that of marketing or selling his crop at paying prices. As I look over the markets for the past 50 years and think of the enormous amount of honey consumed today, compared with the demand for it when I first began keeping bees, the outlook for the future is bright and promising. There seems but little difference in the retail price today and 40 years ago, notwithstanding the very greatly increased production. The nuisance of one producer's selling his honey at retail at wholesale prices seems to be widespread; and, what is more, there appears to be no way to prevent it. We may, however, reduce this evil somewhat by beekeepers or associations securing the names of all beekeepers who practice this method, and buy their honey early in the season. I was told of one beekeeper in Maine, who was selling his comb honey for six cents a pound. Another and larger beekeeper bought him out and put a stop to such considerable competition and made a good profit on the honey at the same time.

* * *

E. S. Miller of Indiana, on page 31, tells us of carloads of honey being put up in five and ten pound pails and sold by canvassers directly to the consuming public. With lower prices, this will be practiced more and more.

* * *

"Caged queens lose fertility," says M. C. Osborne on page 21. Our own experience has been that it is injurious to confine a queen in a small cage for two or three weeks. If it is necessary it is better to confine them with a "push-in-comb cage."

* * *

That is certainly a very interesting article by George Riedel, page 16, on "Beekeeping in Foreign Lands," with climate and honey resources almost perfect. Yet even there he finds conditions not altogether satisfactory. There are other things than success in our business that add to or detract from our happiness.

* * *

Mr. Demuth tells on page 38 how best to prevent the granulation of comb honey in cold weather. There is still in my mind much mystery as to the cause of granulation of comb honey. Doubtless the kind of honey has much to do with it, but not all. Mr. Demuth's advice appears to be the best to be given at present.

* * *

On page 714 of the Atlantic Monthly I read: "It is summer; the breath of sweet air, simmering noises of insects, shrill locusts high in the foliage, heavy bees wading from milkweed to clover." Now this may be very literary, but hardly true to nature. Bees do not wade from milkweed to clover in real life.

* * *

It was with a heavy heart that I read of the death of Mrs. Root, in the January number of Gleanings in Bee Culture. Yet not for long for I can not think of her as dead, for indeed she is not dead but rather removed to a higher sphere of life. With even a small acquaintance with her one could not help but recognize her sweet, patient Christian spirit, in fact, her kinship with the Christ. Our heartfelt sympathy is extended to her large circle of relatives and friends.

Beekeeping as a Side Line

Grace Allen

HERE is how Vergil instructed his Roman readers to take honey, commenting meanwhile on stings and insect enemies, and suggesting a novel way to avoid bad wintering:

"If e'er thou wouldst from its small shelf unseal
The honied store, first having purified
Thy lips and breath, with water sprinkle well
And waft the wreathing smoke with wave of hand.
Twice in the year the teeming brood is born,
Two harvests have they: when the Pleiad star
Spurns with her winged feet the ocean's rim,
And when in flight before the stormful sign
She sinks from heaven beneath the wintry wave.
This is the season when the wrath of bees
Breaks bounds, and if one harm them, they infuse
A venom in each sting and in thy veins
Implant a hidden barb, leaving behind
Their own lives in the little wounds they give.
If a hard winter bodes, and thy fond care
Forecasts their future, pitying what would be
Thy spirit-broken swarm's distressful state,
Fear not to smoke them out with odorous thyme
And cut the empty combs. Haply some newt
Has bored the wax unseen or in the cells
The sunbeam-fearing beetles throng, or they
Who sit at unearned feasts, the shirking drones.
Or some rude hornet with his mightier sting
Has forced his way, or moth of dreadful breed,
Or spider, by Minerva curst, has hung
Her swinging webs at entrance of the hives.
The more the bees feel poverty, the more
They turn to eager labors and retrieve
A fallen people's fortune, heaping high
Their crowded marts and flowery granaries."

And thus he described disease and recommended treatment.

"But if it chance, because the life of bees
Has the same ills as ours, that their small frames
Languish in pestilence, these certain signs
Will tell thee of their plight: the stricken ones
Keep changing color and their visages
Are hideously wasted; then the tribe
Bears slowly from its house the lifeless forms
With mournful pomp of death . . . .
. . . .
Burn at such time the sweet-breathed galbanum.
Carry them honey poured in pipes of reed
Tempting them thus to feed and calling them
To the familiar feast. 'Tis also well
To flavor it with sap of powdered galls
And rose-leaves dried, or freshly trodden must
Warmed at a fire, or raisin-clusters plucked
From some choice vineyard; also leaves of thyme,
. . . .
. . . . . . Then there's a useful flower
Growing in meadows, which the country folk
Call star wort, not a blossom hard to find,
For its large cluster lifts itself in air
Out of one root; its central orb is gold
But it wears petals in a numerous ring
Of glossy purplish hue; . . . . . .
. . . The roots of this steeped well
In hot, high-flavored wine, thou may'st set down
at the hive door in baskets heaping full."

In one place, after having described certain ways of bees, he wrote these lines of deep loveliness:

"These acts and powers observing, some declare
That bees have portion in the mind of God
And life from heaven derive; that God pervades
All lands, the ocean's plain, th' abyss of heaven,
And that from him flocks, cattle, princely men,
All breeds of creatures wild, receive at birth
Each his frail, vital breath; that whence they came
All turn again, dissolving; so that death
Is nowhere found, but vital essences
Upsoaring in the vast, o'er-vaulted sky
Move unextinguished through the starry throng."

There is a long passage about fighting that is hard to understand. Dr. Sanborn and I were wondering about it a few days ago. What did Vergil have in mind when he wrote it, we wondered? During the first few lines I thought it was robbing he was referring to, but, no, for he says,

". . . . . . . they burst
Impetuous from their portals, and the bees
Join battle high in air."

I have never seen anything like that. Yet haven't I read somewhere about swarms sometimes fighting? Most glowing and spirited is the poet's description—how

"The chieftains in the midmost war are known
By their far-shining wings"—

pretty vivid imagination there, surely! There is "a loud alarm"—"a raging charge"—"little wings glitter"—"stings are sharp as javelins"—"they grapple limb with limb." And at the last the victor "compels to panic flight his routed foe." A really laughable part follows, for

". . . when the two chief captains homeward come
From conduct of the war, the vanquished one
Must be condemned to die!"

And how they are garbed!

". . . One now shines forth
In golden flecked attire . . . strong and flourishing,
Of haughty looks and bright with crimson scales,
The other in foul garb inglorious
Drags slothfully his swollen bulk along!"

Yes, "and like their kings, their followers"; so some are

". . . . . . . foul and colorless
As dust-cloud on a highway"—"but the others flash
With glittering beams and wear a glow of fire!"

What was this battle, I repeat? For we must remember all the Georgics, antiquated tho they seem now, were meant to be very practical when written. Vergil told how to breed good colts and calves, how to graft fruit trees—"nor is there one sole way to graft and bud"—when to sow barley and flax and millet, and when to begin work "if vetches thou woulds't have or common kidney bean." What had he seen in his Italian beeyard like a battle high in air, or what had some beekeeping friend described to him?

* * *

In August Gleanings of last year this department had an article on Francois Huber, the blind naturalist of Geneva, who conducted such wonderful investigations in the life and habits of the honeybee a century and more ago. Recently a letter has come to my desk, regretting that so little was there told about Huber's actual discoveries. So here is a brief account, itself necessarily incomplete, of what there was no room for in that article.

He built, as I said in August, the first observation hives—one for a single comb and others for several combs, opening like books with hinged leaves, each leaf containing a comb. Among his important discoveries are the impregnation of the queen in mid-air, and the fact of one fertilization being sufficient; the development of eggs of an unmated queen into drones; the fact that the queen apparently knows what kind of egg she is about to lay and always deposits it in the right cell (tho he acknowledged and clearly stated a mystery in this matter of eggs and sex—a mystery that later was largely cleared up by Dzierbon's great discovery of the parthenogenetic origin of drones); the rivalry of queens; the fact that queens can be reared from worker larvae; that if bees are given worker cells containing worker eggs or larvae, and also containing royal jelly, they will never raise those larvae into workers, but into queens—and if queens are not desired, they will destroy the worker brood and devour the royal jelly; that eggs are true eggs—the embryonic development and emergence having been watched; that some workers sometimes become layers; that drone eggs will produce drones even when reared in worker cells—tho they may be small; and that worker eggs will produce workers even when reared in drone cells—and they will not be large.

He aided in the discovery of ovaries in workers, thus doing away with the age-old idea of neuters. He ascertained that the slaughter of the drones never takes places in a colony lacking a fertile queen, or in one still fostering swarming ambitions. By placing eggs in cells in blown-glass, and thru these walls observing the spinning of cocoons, he concluded that drones and workers spin complete cocoons, while queens spin imperfect ones, which, enveloping the head and thorax, extend only to the second segment of the abdomen, and inferred that if these cocoons were complete the queens could not destroy rival pupae. He observed that the laying of drone eggs is either coincident with swarming preparations, or precedes them, and established many facts about swarming. He demonstrated by many experiments that bees, eggs and larvae all absorb oxygen and give off carbonic acid. In studying the air of the hive in this connection, he discovered the fact and the details of systematic ventilation, and the renewal of air in the hive by wing work. He studied thoroly the Sphinx atropos (death's head moth) and its ravages in the hive. He learned that the odor of the poison of the sting rouses other bees to stinging. He discovered the origin of propolis. He made extensive studies of the senses of bees, locating the organs of touch in the antennae, and those of smell—which he demonstrated to be very keen—in the mouth (tho this theory seems recently to have been disproved—along with the conflicting claims of many other students of these elusive organs). He failed to establish a sense of hearing, and questioned its existence. He concluded that taste was at least very imperfect. In his study of sight, he discovered that the lenses of the eyes of bees are not adjustable.

When he was forty-five years old, he lost his valued assistant, Burnens, who went to another city and accepted an office of some influence. Huber's later experiments, especially the very extensive ones with wax, were conducted with the assistance of his son Pierre, who became himself a naturalist of note, particularly in connection with the study of ants.

Huber discovered that wax comes from the under side of the abdomen of the workers. He also proved it to be produced by the digestion and conversion of honey, tho it had long been supposed to come from the conversion of pollen. He confined one swarm of bees on honey only and another on pollen only. New comb was built in the first hive, and removed, seven times; while none at all was made in the second. But why, then, he promptly wondered, do bees gather pollen? Not for the sustenance of the adult bees, he concluded after further study (in which he proved honey to be essential), but for larval food. After close scrutiny he decided that workers swallow pollen and later regurgitate it as food for the larvae. Marked bees were seen to eat pollen, go to the brood and plunge their heads into cells containing larvae. After they left, these cells were examined and found to contain a supply of larval food. Another thing that he discovered when studying wax, was that flowers do not always contain nectar, as had been supposed—and that nectar secretion is influenced by variations in atmospheric conditions.

The entire process of comb construction was observed and recorded in all its details. Bees were watched removing wax scales from the under side of the abdomen and passing them forward to the mandibles, whence, later, the plastic and cohesive wax issued and was attached to the top of the hive. One bee alone, he reported, starts the comb-building. When her supply of wax is exhausted, another follows, proceeding the same way, guided by the work of her predecessor. When this waxen wall is about one inch long and about two-thirds as high as one cell, they begin excavating it into cells, one on one side, two on the other, the joining of the two being exactly opposite the center of the one. Only these first cells, however, are so excavated, all the others being built in their regular cell form. He claimed, too, that the much-praised exactness of the bee is overestimated.

Huber's work has been the foundation on which modern investigation has rested. To an astonishing degree modern investigators (not counting Dzierzon) have merely verified the work of the great blind master.

FROM NORTH, EAST, WEST AND SOUTH

In Northern California.

In nearly all sections of our part of the state, colonie[illegible]ent into the winter period strong in y[illegible]g bees and heavy in stores—strong in yo[illegible] bees owing to various sorts of fall flow[illegible]n almost all localities, and heavy in stores, owing partly to the fall flows and, to a greater extent, because the market, for the lower grades of honey especially, was so negligible that it hardly paid the beekeepers to extract. This condition is particularly true where it concerned members of the California Honey Producers' Co-operative Exchange, who were receiving as an advance but 3 cents per pound, and, as rumor had it, were to receive no more. We have been favored lately with some very heavy rainfall, and, with bees in such good condition, prospects for next season's crops are excellent.

Many of us are greatly concerned regarding the future of co-operative marketing of honey in California. It will be remembered that the Exchange's three-year marketing contract has expired. Will the various local exchanges continue to exist and, if so, are they again to become members of the State Exchange? And when will the State Exchange inform its members, the local exchanges? and, in turn, when w[illegible]he local exchanges inform their m[illegible], the beekeepers, regarding a se[illegible]t on the 1920 and 1921 pools? It [illegible]een many months now, according to the best information that the writer can gather, since members of local exchanges have received any correspondence relative to the settlement of pools from either the local or state exchanges.

Two weeks of beekeepers' short courses, conducted jointly by the University of California College of Agriculture and the U. S. Department of Agriculture, for beginners and advanced students, were held at Berkeley during December. The attendance was small, especially for the last week, which was devoted to advanced students. It seems to be almost impossible to convince beekeepers generally that it is their distinct advantage to attend such courses when some of the best authorities in the country are prepared to give them the very latest on beekeeping practices. Beekeeping has become a specialized industry and has changed very rapidly during the past few years. We hardly realize that this is true. A few years ago we did not know where to find good locations, nor would we have known how to secure the crops in such locations, were it not for the teachings of the past few years. To combat diseases is a much more serious problem today. And we are just beginning to find out that we must know what it costs to produce honey. Dr. E. F. Phillips of Washington, Geo. S. Demuth, of this journal, and other qualified men discussed and imparted the latest teachings on the foregoing, as well as other subjects, which we cannot afford today to pass over lightly. If we do, others are bound to take our places. Beekeeping journals are recording our progress, and every one of us should devote much more time to their careful perusal. M. C. Richter.

Big Sur, Calif.

* * *

In Southern California.

December came in very dry, and, until after the middle of the month, it looked as if we would have a dry year. Then it began raining, and the ground has not had such a soaking for many years. There was rain, rain, rain and for a change a few more showers. From seven to thirty inches have fallen over the bee-ranges of southern California since my last report. Roads were made impassable in many sections, railway and highway bridges were washed out, some of these being repaired and going out a second time during the storm.

The rain has surely put a different aspect on the prospects for honey, and there apparently seems to be no reason for anything but the best of crops for the season of 1922. Of course, spring rains, winds or climatic conditions can still materially help or hinder in the making of a crop. But, generally speaking, everybody is happy.

The short course in beekeeping, held in Exposition Park, Los Angeles, early in December, was not as well attended as it should have been. The course was one of much value to beekeepers, and it is not often that we are given the opportunity of attending lectures of the nature of those given. But the great majority of beekeepers are inclined to pay little or no attention to such things. When spring comes they get busy for a little while with the bees and then ''lay them by'' for the rest of the year. It is amazing sometimes how well some apiaries really do—considering the care they get.

Referring to page 743 of December Gleanings, we beekeepers of California think that we are entitled to some of those ''Short Cuts'' promised by ye editor as ''Seasonable Articles'' for use during the year 1922. We hardly think that we are a year behind, so we must be ahead. At any rate, an article on swarm control in the May issue would be of little use to a beekeeper whose bees had swarmed during March or April. Or, an article in July or August on harvesting a crop of honey and packing it for market would not do much good to a fellow who had produced his honey during May and June, as many of us do in California. How about this, Mr. Editor?

[The Editor had not forgotten the needs of California beekeepers when he wrote the outline of plans for 1922, but had already provided in advance for exactly what you are asking. See M. C. Richter's article in this issue and others to follow. Gleanings has some other surprises for you, and expects to do much better than promised editorially in the December issue.—Editor.]

Wonder if Gleanings will move to California next. With so many of their good people coming, it may not be expecting too much to look for the whole Gleanings family to follow to the best place on earth.

With February comes considerable apiary work in southern California. One of the most important duties is to see that all of the colonies are supplied with sufficient stores to carry them thru unfavorable weather. Especially be on the lookout when they begin to have a large number of young bees and much brood to care for. The weather being favorable, some may start queen-cells by the last of the month. These should be carefully looked after, as the colonies with these young queens are the very best for 1922 honey-gathering. Get plenty of supplies ready, such as supers, frames and hives for increase. All extractors, autos and anything used during the busy season should be put into good condition while there is plenty of time. ''A stitch in time'' applies to our industry as much as to any other, or more. L. L. Andrews.

Corona, Calif.

* * *

In Texas.—The weather conditions during December have been almost ideal, so far as man is concerned, but they have caused the bees to utilize a great amount of stores. We had our first killing frost the 9th of December and a cold snap about the 20th. With the exception of these few cold mornings we have had almost summer conditions. The bees have flown freely almost every day and during the latter part of the month on some days were bringing in large amounts of pollen from mistletoe. During the last week of December numbers of bees were seen apparently collecting nectar from several species of hardy composites and from white brush. These conditions exist thruout the state, with the exception that the weather is slightly colder in the northern part of the state, and the consumption of stores correspondingly less. An examination of about 400 colonies in the past two weeks shows that the prediction made some three months ago has worked out remarkably well. The only colonies which have died out were those with honey and pollen-clogged brood-nests. A careful suvey of this section of the state leads to the statement that the loss of colonies during the winter will largely occur within the month of December. This statement is agreed to by the large majority of our beekeepers, and taking this statement as true, it is figured that the winter loss in this section for 1921-1922 will not be over 3 per cent. This is very small but is accounted for by the fact that large amounts of honey were left upon the hives. In all of the colonies that have died out, so far as examined we find that the cause was the lack of young bees rather than the lack of stores, and this was due in a number of cases to old queens. The honey-plant condition remains unchanged, and the prospects appear very good for a spring honey flow.

The beekeepers of this section were very much interested in the article by E. F. Atwater, in the December Gleanings. If Mr. Atwater were a beekeeper in the chaparral section of southwest Texas, he would not make some of the statements that he makes. In former years we ran our outyards up to 150 or 200 colonies, but after comparing the returns from the larger and the smaller outyards, the beekeepers have come to the common practice of placing not over 50 colonies in an outyard and placing the outyards closer together. We even believe that in a few years we shall be reducing the size of our outyards to perhaps 25 and again shortening the distance between them. The Texas beekeepers look upon the problem from the standpoint that they can get a greater amount of honey by so placing the outyards that the bees will not have to travel more than a mile in the collection of honey. Of course, we understand that these small yards are necessitated by our scanty flora in some places; but in other places we know that we have as great a number of nectar plants per square mile as anywhere on earth, and the short distance between apiaries is simply a method to increase our yield.

Dr. Chas. T. Vorhies reports Desert Bloom (*Baccharis sarathroides*) as a fall nectar and pollen plant in Arizona. In Texas we have several species of *Baccharis*, and while we have never heard of a honey flow recorded from this plant we positively know that it is the source of a large amount of the amber mild-flavored honey produced along the Gulf Coast. This plant so resembles willow that very few people know it as a separate plant. Along the Gulf Coast, *Baccharis* grows by the acre. In fact, there are some places where there are thousands of acres in a locality completely covered by this plant. The Mexicans' name for it is Yerba Dulce. This is very appropriate as the plant has the odor of recently extracted honey. A number of the beekeepers along the Gulf undoubtedly owe their large average yields to this plant.

We note that several beekeepers have rerecently reported wild carrot as a nectar plant, and in writing about it have confused it with the tame carrot. These plants are very different in the flower arrangement. The flowers of the cultivated carrot are worked very heavily by the bees wherever the plant is allowed to bloom; but the wild carrot, which occurs in immense quantities wherever there is a limestone soil, appears to be a nectar plant only on rare occasions. The writer kept careful notes on this plant for about four years, and only during one period of two weeks were honeybees observed to work upon it. Its nectaries are exposed, which makes this plant primarily a fly plant, and the nectar does not seem to be overly abundant.

E. O. Timm of Bennington, Neb., who has been secretary of the Nebraska Honey Producers' Association for several years, will work for E. B. Ault of Calallen, Texas, during the coming summer. The beekeepers of Texas extend the hand of welcome to Mr. Timm, and we are sure that he in turn will benefit us by his presence.

Frank Warmuth, who is well known as a queen-breeder in Texas, will be with the firm of Patterson & Winters in 1922. Mr. Warmuth has made a very enviable reputation with Mr. Burleson of Waxahachie and Mr. Ault of Calallen.

The Texas Honey Producers' Association will hold its annual business meeting on January 17. Many matters of importance must be decided at that time. As these matters concern all beekeepers in Texas, all beekeepers, whether members or not, are invited to be present. Three directors and a delegate to the American Honey Producers' League meeting are to be elected.

San Antonio, Tex. H. B. Parks.

* * *

In Lousiana.—The continued summer-like weather all thru the autumn and up to the present time (January 3) has kept a few fall honey plants blooming, and the bees have been constantly at work carrying in some honey and a great deal of pollen. Of course, this condition does not apply to the extreme north end of the state. In that locality, an early frost, about October 20, killed everything, and since that time, while the bees have been flying, there was nothing in the nectar line to gather.

Today I noticed the fine condition of the white clover. The growth had so far advanced that a great many blossoms were noticeable. This is not unusual here, as the clover begins to bloom at this time each year. However, I have never seen a bee working on white clover until about February 15; after that time it may be depended upon as a nectar producer until about July 1.

About January 5 the soft maple comes in blossom and produces quite an abundance of honey and pollen. It is followed from that time on with blossoms of many minor nectar-secreting plants without any interruption, until the big crops of tupelo and black gum, willow, holly and gallberry come in April and May.

I have found a great mistake committed by many beekeepers in Louisiana, and that is the small number of supers placed above each brood-chamber. In many cases I find only one shallow super is being used, while the honey flow in that locality would enable the bees to fill easily a half-dozen supers.

Our spring flow comes in such abundance that it is an easy matter for the bees to store, at times, 10 to 15 pounds each day. Why should we lose this valuable honey when it is so easy to purchase extra supplies? About March 1 at least as many as three shallow supers can be placed above each brood-chamber. This will help to prevent swarming which occurs very early here, and also will insure a good crop.

The weather conditions are such in Louisiana that this extra room may easily be given without chilling the bees, and it will act as a playground in bad weather for the young bees that are emerging from the cells so rapidly at this season.

The United States Government, as well as Louisiana State Government, has spent millions of dollars in building levees along the rivers and in digging canals to drain districts, and in these localities the bee flora has become so great that it is possible for a beekeeper to harvest as many as seven crops each year.

We have every grade of honey from water white to amber. All of these flows are distinct, with the exception of our July flow, and by extracting in time, the honey from each can easily be kept separate.

There are many intelligent beekeepers here, and the industry is rapidly coming to the front. In due time Louisiana will easily rank among the foremost bee and honey-producing states of America.

Baton Rouge, La. E. C. Davis.

* * *

In Alabama.—The winter till January 1 was very mild, and the bees began gathering substitutes for pollen just a few days before Christmas. If this condition had continued all the queens would have begun to lay and, of course, greatly reduced the supply of winter stores; but on January 1 we had a cold spell that will prevent any more trouble from this cause, for a while at least.

We have also had very little rain so far. While this has caused no damage yet, unless there are more rains before March we shall probably have a wet spring, which will

FROM NORTH, EAST, WEST AND SOUTH

cause the bees to build up slowly. This, of course, is serious, especially for the package shipper.

While the general business depression has hit us pretty hard the beekeepers are optimistic, expecting better times when things open up in the spring. Practically all beekeepers are buying supplies and preparing for a big year whether they get it or not.

At extracting time last year there was no market for honey; this caused an unusual amount to be left on the hives, some men not robbing half their bees. This, together with the slack demand for queens and the consequent low price, caused beekeepers to leave their bees in better shape than they have in many years.

Most package shippers are expecting a good year in spite of the general depression, as supplies are lower than they have been for years, while the price of honey is on the increase.

The unusual demand for packages and queens during the war has caused many men to go into the bee business in localities not suited for commercial beekeeping, and others are still doing this, seeming to feel that beekeeping will remain on a war-time basis while everything else sinks to below pre-war levels. Of course, these men will go out of the bee business as they went into it, poorer but wiser.

The low price of honey and high freight rates seem to be a blessing in disguise, causing twice as much honey to be sold locally as before, principally on account of the activity of the beekeepers in putting honey before the people. J. M. Cutts.

Montgomery, Ala.

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In Mississippi.—As a general thing, over the state bees went into winter heavy with stores. November, December and, thus far, January have been pleasantly mild. We do not think this mildness has been harmful to our bees. In fact, we are of the opinion that the literature has exaggerated somewhat the extent to which bees wear themselves out during the warm southern winters. We have made some observations in the field this winter that bear us out in this.

On December 14 last we visited our good friend, Dr. J. D. Shields of Natchez, Miss., for the purpose of laying plans for shipping nuclei and pound packages, which work he will undertake in the spring. The day was warm and sunny. Roses and violets were profusely in bloom about the house. Dr. Shields was anxious to show me the color of his bees to get my opinion as to their purity as Italians. We left his front gallery shortly after noon to look over a small yard near the house, first, however, having lightly complained of the heat and having shed our coats. The mercury was at about 76 degrees and not a bee was flying. It was necessary for us to tap at the entrance of each hive to get the bees to show themselves.

The next day we visited B. F. Minnis, an esteemed citizen and commercial honey producer of Port Gibson, Miss. This was another warm sunny day, but there was no sound of flying bees in the air. About three o'clock we did see one bee come in with a load of bright yellow pollen, probably from the tiny blue aster, that was still putting out a few straggling flowers. Perhaps there were not two dozen bees in this yard of 40 colonies that had left the quiescence of the hive to rove the fields, even tho it was warm and there was some little food available.

We recently had the good fortune of a trip east and the pleasure of visiting one of the foremost authorities in the country on beekeeping. He was of the opinion that the South had seen its balmiest days in the nucleus and package business. We are not as yet, however, ready to accept this man's point of view. Those in the business are anything but downhearted. A peep into the bee journals witnesses the fact that they are spending large sums on advertising. We are confident with them, since large numbers of colonies weaken or die out in the North every winter, that the southern beekeeper will be called on every spring to keep this otherwise unoccupied equipment from becoming dead overhead. R. B. Willson.

Agricultural College, Miss.

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In Southern Indiana.—In southern Indiana and Illinois, the roadside selling of honey should be more generally practiced than it is, more especially now that hard roads are being built extensively, which brings the buyer in his automobile right to your yard. Let us more carefully study business methods and salesmanship. A man clever enough to produce honey is clever enough to sell it. A sign in large neat letters, well back from the road, so it may be easily read as the autos speed along, is good; or, if placed close to the way, it should be lettered on both sides, that it can be read coming and going. Five and ten pound tin pails are more and more coming into use, and are very popular with the auto trade. Nothing ruins the honey business like selling at too low a figure. Honey is the most delicious and wholesome of all sweets, and should command a good price. There are plenty of cheap syrups and glucose concoctions now on the market that are cheap in price and quality, but honey is not at all in this class. We must not attempt to compete with them in price, but ask one that is fair and that brands our goods as superior in every way.

We are indeed unfortunate in the name

''Extracted Honey.'' It is misleading to the uninformed. A prominent business man came to my place not long ago to buy some honey. He said, ''I like your honey for I know it is real bee honey. I can get extract of honey at the stores; but I want real honey.'' Another man told me once, ''I prefer your honey to that honey extract sold in the stores.'' We laugh at this ignorance, but it reminds me of a story. Ikie met Archie and said, ''Archie, I haf a goot choke on you. After this ven you kisses your vife you better pull down der curtains for I zaw you kiss your vife last night.'' Archie replied, ''Ah, Ikie, der laff ish on you, der laff ish on you. I vas not at home at all lasht night.'' So while we are laughing at the other fellow's ignorance, let us be sure ''der laff ish not on us.'' If the public is ignorant of matters pertaining to honey, who is to blame, they for not learning, or we for not enlightening them? Since beekeeping is our business, and we have honey for sale, I believe ''der laff ish on us.''

Vincennes, Ind. Jay Smith.

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In Porto Rico.—Beekeeping in Porto Rico is at a low ebb. I know of one firm that has some thousand colonies, which have not yielded an average of 25 pounds per colony in the past three years. This low yield, owing largely to overcrowding, coupled with the low price of honey, has simply stagnated all activity among the beekeepers. I am led to believe there is considerable honey ready for extracting which has been left with the bees, as it would hardly pay for the cost of extracting it.

Many apiaries are located in such inaccessible places that it is impossible to reach them by any wheeled vehicle. This means all supplies and all honey extracted must be transported to the nearest usable road on the heads of peons (laborers) or by small burros which carry from 100 to 150 pounds a load.

When delivered to the road the honey is emptied into fifty-gallon barrels. From this point it is taken in motor trucks to the nearest coast town which is visited by the steamships. All the island transportation is still at the high war-time rates or worse. Local handling of freights now must be done by means of motor trucks. The price of gasoline averages about 50 cents a gallon, and there is no talk of profiteering. It frequently happens the steamship is delayed. Then the barrels of honey must be left in storage at a price. Unless there is a dock at the port, the honey must be lightered out to the steamship by means of small flat-bottomed boats, also at a price. So it can readily be understood that expenses jump when you figure there is a payment to be made for each separate handling—which is only right, but it necessarily raises the cost of production.

To recapitulate: First, you have the cost of the empty barrel, sold today for about $5.50 each; next, two to three pounds of parrowax to wax the inside of the barrel; delivery of empty barrel to apiary; cost of delivery of honey to port; cost of lighterage, steamship freight and insurance; cost of handling in New York City, if sold there, plus the fixed charge of the commission man making sale. When all these fixed charges are met, you will be lucky if you do not receive a bill for costs which the amount received for honey did not cover.

These are some of the reasons that good honey is not worth the cost of extracting at present prices.

In September of this year fifty-gallon barrels of honey had been selling on the island delivered to a port town for $19.00. Deducting cost of new barrel and transportation, the producer receives about one and eleven-twelfths cents per pound, net. Out of this must be paid labor, rent, upkeep and return on investment. Naturally, it is impossible to produce honey at this figure.

Within the past three months the States' price for Porto Rican honey has advanced about 30 cents a gallon. This will help, but this price will not leave a balance on the right side of the ledger. With these prices, there is little doubt many small apiaries will be allowed to dwindle away until there is nothing left but empty hives and damaged frames. Penn G. Snyder.

Aibonito, Porto Rico.

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In Utah.—Utah will come up to next season well cleaned up on her two previous honey crops with very little honey held over. Our local market is very good, 100,000 pounds in 60-pound cans being sold in this valley besides the bottled goods sold in the stores. There are perhaps 35,000 people in Cache Valley, so this means that these people have bought at least three pounds per capita in the last six months.

The beekepers of Utah are looking ahead with much pleasure to the meeting of the Honey Producers' League to be held in Salt Lake City in January, but we were disappointed in not being favored by the Government men who held two meetings in Colorado, then flew right over to California.

While there are perhaps not many places where beekeepers need instruction more than we do here, we are not without some merit, for we have one beekeeper who produced 150 tons of honey last season. After the Government finds out that there is such a place in Utah on the map, we may be noticed next time. M. A. Gill.

Hyrum, Utah.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Large Hives in New Mexico. We are trying out two yards of the large hives shown in the accompanying picture. They hold 12 frames, but we use only 11 in the brood-chamber and 10 in the super. The colonies in these hives for the last two years (the length of time we have been running them) have produced more than twice as much honey per colony as those in eight-frame hives. The picture of the one row shows where we have been making tests with one, two and three entrances during the heavy honey flow. The picture was taken just after the top entrances were closed. I could see no difference in the ones that had three entrances and the ones that had one good large one. In the picture of the yard the small hives are a part of my mating nucleus yard. The Rio Grande River is just across the valley and runs around the foot of the hills in the distance. J. W. Powell.

Mesilla Park, N. M.

Hives with one, two and three entrances.

To Clean Pollen Clogged Combs. I noticed an article in November issue of Gleanings in regard to getting the bees to remove pollen from brood-combs. I have tried scraping the cells with the hive-tool as recommended, and it worked. I have also tried shaving the cells with a sharp knife or an uncapping-knife and that worked well, too. The best plan I have ever tried where the pollen was old and dry was to fill the cells with water and let the combs soak a day or two. The water will soften the pollen, and it can be rinsed out. I have never had to melt up any combs on account of their being clogged with pollen.

Homedale, Idaho. A. N. Norton.

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Who Is This Man? There is a pestilential fellow, who is trying to ruin my chances for successful beekeeping (and yours, too). In every state which I have visited, he has been at work before me, blasting my chances and the chances of countless others, and, never tiring, persists at his abominable work, heartlessly taking opportunity for education, travel, and all the better things of life, even bread and butter itself, from me and my family, and from yours.

Who is this man who skulks on the trail of every beekeeper who seeks to do well by himself, his family, his local community, his nation and the world?

Regardless of cost of production and a fair income to the producer, tho usually a producer himself, he is the man who cuts the price. E. F. Atwater.

Meridian, Idaho.

An apiary of big hives in New Mexico belonging to J. W. Powell.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Paste for Labels That Stick to Tin. Take one part honey, three parts flour, and water sufficient to cook thoroly into a smooth paste. I leave the paste a trifle stiff and dip the tip of the brush into water, then lightly over the top of the paste.

This paste will keep sweet a long time and will stick labels to tin or glass cheaper and better than any paste I have seen. I have found nothing so far that it will not stick to.

The large soft paper mail order house catalogs are just springy enough to make the best of pasting pads. Lay flat with back toward you, and a few leaves turned over or torn out. Place a skewed pile of labels bottom up, paste skewed edges and top label, then roll the can on the top label to pick it up and finally smooth down the corners.

Laplata, N. Mex. Harrison H. Brown.

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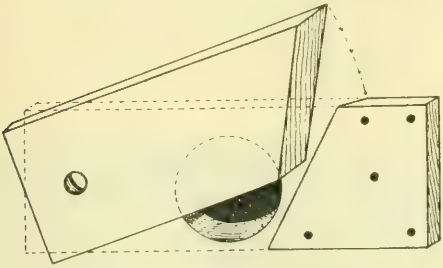
Ventilator Made of Wood. Having just read E. L. Sechrist's article concerning the Hanson ventilator in Gleanings for December, 1921, I take it upon myself to offer a suggestion as to a more simple way to obtain the same result.

Mr. Sechrist's idea is very good and worthy of consideration. I intend to use it in my own yard during the coming year.

Having spent 12 years at the carpenter's trade, I naturally like to make things of wood, especially when I think I can improve them by doing so. When making my ventilators, I leave the hole in the super, as Mr. Sechrist has suggested, but discard the three metal parts and in their place put a piece of ⅜-inch board about 2 x 5¾ inches. This board will have been sawed in two at an angle both on its face and thickness as shown in cut. The smaller piece is nailed to the super, and the larger piece is fastened with one 1¼-inch No. 10 R. H. screw in such a way as to allow it to swing on the screw. By swinging the larger piece around and letting it hang in a vertical position, the ventilator is left open, and by placing a stick between the saw-cut, the ventilator can be opened to any size desired. Both pieces are fastened to super, therefore there is no danger of losing any of the parts.



This ventilator can be made almost airtight, due to the manner in which the board has been cut in two, as the harder the larger piece is pushed in the smaller piece, the tighter it hugs the super.

Mr. Sechrist claims his ventilators cost him two cents each. The price of this one will not exceed one cent; and still it embodies all the good features explained by Mr. Sechrist in his article, with the added advantage that one does not have to be so careful when painting his supers, as a coat of paint will not interfere with its operation in any way. Geo. D. Larsen.

Omaha, Neb.

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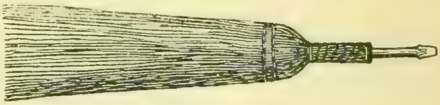
Combined Bee Brush and Hive Tool. As I do not like to have too many tools in my hands, I combined a Coggshall brush and a screwdriver as shown in the sketch. I call it the "Buchman Broom." You are at liberty to use it. It is simply a strong screwdriver inserted in the handle of the brush. It is easy to loosen up the frames with it and then brush off the bees without changing tools. It has to be tried to be appreciated. John Buchman.



Two-in-one apiary tool.

Trumansburg, N. Y.

* * *

Chunk Honey in a Slow Honey Flow. I use the Long Idea Hive here, as honey comes in too slowly to force the bees upstairs. I use Jumbo frames with full sheets of foundation. The bees will put about four inches of honey above the brood. When this is sealed over I cut out a square piece at each end, leaving a strip at the ends and middle to support the comb below. The next morning after the bees have cleaned up all the honey from the combs I cut out a piece of foundation and fill the holes cut out the day previous. As soon as they are filled I cut out the middle and fill that up as before. Sometimes I get a full frame, which I cut out and fill with a full sheet of foundation. If the bees fill an old comb with honey, I spread the brood-nest and put the frame in between when they will clean it out, putting the honey in the new combs where I want it. George H. Place.

Mountain Home, Ark.

GLEANED BY ASKING

Geo. S. Demuth

Question.—If a colony has good, straight combs, is it necessary to cut them out when they get old and replace them with new ones, or will it be all right to continue using them after they are black with age?

Colorado. Vernon L. McClure.

Answer.—No. It is neither necessary nor advisable to discard brood-combs simply because of their age. Good, straight combs, having nearly all cells of worker size that have had brood reared in them to the top-bar, so that they are strengthened thruout by cocoons, are valuable property and should not be melted up on account of their age. For discarding combs there are plenty of other reasons, which are much more important than that of age. Many combs are damaged for brood-rearing purposes by the stretching of the cells in the upper portion before this part of the comb has been strengthened by cocoons, because honey is stored in the upper part of the comb the first year, leaving about two inches of tender comb. When the cells are stretched too much out of shape they can not be used for brood-rearing, thus greatly reducing the value of such combs for use in the brood-chamber.

You probably have in mind the reduction in the size of the cells by the addition of the cocoons, as brood is reared in them time after time. Theoretically the addition of layer after layer of cocoons would soon so reduce the size of the cells that they would become too small for brood-rearing; but, in practice, combs that have been in use 30 years or more are apparently just as good for brood-rearing as new ones. The bees evidently gnaw out the cocoons at the sides of the cells, leaving them at the bottom. This accumulation of material in the bottom, of course, would make the cells shallower, but the bees extend them to full depth as cocoons accumulate in the bottom. Old brood-combs are, therefore, thicker than new ones. Sometimes the bees tear down the walls of the cells to the base and then rebuild them. This is usually done in patches instead of over the whole comb.

SNOW CLOSING THE ENTRANCE.

Question.—Will it injure the bees for the snow to drift high enough to cover the hive entrances, or will enough air pass thru the snow to supply the needs of the bees? G. C. Morrison.

Ohio.

Answer.—Loose snow does not injure the bees even when it covers the hives completely. In fact, during cold weather the the snow affords additional protection. The bees do not need much oxygen during winter if they are quiet and wintering well. Plenty of air would pass thru the snow to supply all of the oxygen needed for strong colonies that are quiet. If wet, slushy snow is driven into the entrance by the wind and then freezes, closing the entrance entirely, there would be some danger of the bees smothering, especially if the colony is abnormally active and not wintering well. When the bees are as quiet as they usually are in November and December, the entrance could even be sealed with ice for some time without smothering the bees, since they use so little oxygen when quiet that probably enough would pass thru the walls of the hive to prevent smothering for several days. As soon as the bees discover that they are confined, however, they immediately become excited and would then need many times as much oxygen as when quiet.

DO BEES NEED POLLEN FOR WINTER?

Question.—Some of my colonies are going into the winter with little or no pollen, while others have a good supply. Does this make any difference? J. A. Satterwhite.

Virginia.

Answer.—Apparently bees do not need pollen during the broodless period of winter, but they will need it when brood-rearing is begun in the spring. At this time, however, they are usually able to gather some pollen from early flowers, so it should not be necessary in your locality to have a store of pollen in the hives during the winter for spring use. In localities where early pollen is not available, combs of stored pollen would of course be advantageous, but these could be given in the spring if necessary.

THE JUMBO HIVE.

Question.—Does the Jumbo hive have enough room for the queen so that an excluder is not needed, and do the bees store plenty of honey in the brood-chamber of these hives so that feeding is not necessary? Earl F. Townsend.

Michigan.

Answer.—The Jumbo hive has enough room for the most prolific queens if the combs are all good, having nearly all cells of worker size; but when producing extracted honey this does not insure that the queen will stay below, especially if any old dark combs, which have previously had brood reared in them, are used in the supers. By using only white combs in which no brood has ever been reared in the supers, there would be less trouble from queens going above. In comb-honey production, of course, the queen-excluder is not needed, even with a smaller hive. The amount of honey stored in the brood-chamber at the close of the season depends largely upon the character of the honey flow. In some locations there is but little honey in the brood-chamber at the close of the season in extracted-honey production, even when hives larger than the Jumbo are used; but, in other locations, especially if the honey flow is slow toward the close of the season the Jumbo hive is usually well provisioned for winter. The large brood-chamber, as a rule, can not be depended upon to have a sufficient supply of honey for the bees at the close of the honey flow, if extracting supers were given freely during the honey flow. For this reason some beekeepers use a shallow extracting super as a food-chamber, this being filled early in the season and tiered up above the queen-excluder among the extracting supers during the honey flow to insure sufficient stores for winter, thus avoiding feeding in the fall.

WINTERING IN TWO STORIES.

Question.—Is there any advantage in using two stories for wintering in the quadruple packing-case when I can easily give a second story when I clip my queens in the spring. S. H. Graham.
New York.

Answer.—Probably not in your locality. In fact one would expect them to winter better in a single story on account of the smaller amount of space to keep warm. The advantage of two stories is largely in supplying a greater amount of stores and room for spring brood-rearing. If a second story two-thirds or more filled with honey is given next spring in time for the heavy spring brood-rearing, the advantages of the two-story system will be secured, with the added advantage of having a smaller winter chamber. The greatest trouble with this plan is the temptation to extract this extra honey when it is taken off in the fall to sell with the surplus honey instead of storing it in a warm room during the winter to be given back next spring. The two-story plan removes this temptation and usually gives splendid results where the winters are not too severe.

FROTH ON HONEY IN BOTTLES.

Question.—What causes honey stored in a cement honey-house, which is rather damp, to form a white froth when extracted and placed in bottles? It looks as tho it is fermenting and is rather thin?
New York. W. Burden.

Answer.—Your last sentence would indicate that the honey may have absorbed moisture before it was extracted, while stored in the damp honey-house, for it should not be thin now if it was well ripened and mostly sealed before you took it from the bees. Unless it was stored for some time in this room before being extracted it should not have absorbed much moisture in this way. You can tell by smelling or tasting if any of it is fermenting. Even a slight fermentation can be easily detected in this way. When heated honey is put into bottles the air bubbles rising to the surface sometimes form froth on the top, even on thick well-ripened honey. This can be avoided by having the honey-gate attached to a hose from the filling tank, the honey-gate having a long snout by which the stream of honey can be directed to the bottom of the bottle, the gate being lifted as the jar is filled. Honey that is slightly fermented can be improved by heating not above 150-160°F. to drive off the alcohol; but, if there has been much fermentation, the delicate flavor of the honey will be destroyed.

DURING WHAT MONTH DO QUEENS LAY.

Question.—Does the queen bee lay every month in the year? If not, during which months does she lay? Mary Fisk.
Texas.

Answer.—Queens do not lay thruout the year, but usually take a rest during the winter. In your locality no doubt there will be some queens laying every month in the year in a good-sized apiary, but when the colonies are normal in strength the queens usually rest for at least a few weeks during the winter even in the South. Brood-rearing is usually suspended in the northern portion of the United States sometimes in September or early in October, and if conditions are favorable it is not begun again until sometime in March. Farther south of course the broodless period is shorter, but except in the extreme South brood-rearing is usually suspended during November and December in all colonies that are normal in strength. Weak colonies usually have a shorter broodless period than strong ones.

PACKAGE BEES OR NUCLEI.

Question.—Which would be better for me, to purchase from the South in the spring three-frame nuclei or three-pound packages of bees at the same price? A young laying queen is to be included in either case. E. W. Wooster.
Maine.

Answer.—This will depend upon just how much sealed brood would be included in the three-frame nuclei as well as upon the equipment you have ready for receiving the bees. If three frames well filled with brood nearly ready to emerge were included, the three-frame nuclei would give you more bees to start with than the three-pound packages, for each frame would yield nearly a pound of young bees. If, however, only a little brood is included, the packages would, no doubt, give you more bees to start with, provided, of course, the packages and nuclei arrive in equally good condition.

When you receive the nuclei, if you receive in sealed brood and bees as many or more bees after the brood emerges, you are ahead in that you have three combs containing some honey and pollen. If you do not have combs containing some honey and pollen and have to start the package bees on frames of foundation, the nuclei should forge ahead of the package bees; but if you can put them on combs containing some honey and pollen, there would not be much difference.

Generally speaking, the three-frame nuclei should be better, but a serious objection to the shipping of nuclei as a general practice is the danger of transmitting the brood diseases thru the combs. Package bees being without combs avoid this danger when provisioned with queen-cage candy in which no honey was used.

JUST NEWS

Editors

THERE is now in effect a quarantine, which prohibits the importation of bees on combs or used beekeepers' equipment into any part of the Upper Peninsula of Michigan, Cheboygan, Emmit and Charlevoix Counties, Mich.

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The Governor of California has issued a proclamation making the week of February 6-11 "California Honey Week." This is the week of the 33d annual convention of the California State Beekeepers' Association.

* * *

The state of Georgia has amended its foul brood law, requiring that persons who desire to sell bees and queens shall secure a license from the state before selling any bees or queens. The fee for this license is $25.00.

* * *

E. F. Phillips is to speak on "The Honeybee, Its Type of Individuals; the Relationship of Bees to Flowers and Their Economic Value in Ensuring Cross-pollination; Beekeeping as an Industry and an Important Branch of Agriculture," at the Academy of Natural Sciences of Philadelphia, 19th and Race streets on April 3, this being a part of the Ludwick lectures.

* * *

At the annual meeting of the New York State Association of Beekeepers' Societies, held at Syracuse, N. Y., Dec. 4, 5 and 6, 1921, it was voted to abide by the motion of Feb. 20, 1920, and merge into the Empire State Federation of Beekeepers' Cooperative Associations, Inc. The above change was made to give the state organization a financial and business standing for the mutual benefit of its members, continuing, too, the social and educational activities. The board of directors, with the aid of representatives from the Bureau of Farms and Markets at a recent meeting, mapped out tentative plans and framed bylaws for the Federation and local associations for their approval. To further perfect this organization the directors have called a meeting of representatives of all the local or regional beekeepers' associations thruout New York State at 10 o'clock, Wednesday, Feb. 1, 1922, at the courthouse, Syracuse, N. Y. While this is a meeting of representatives of local organizations, the meeting will be open to all beekeepers.

* * *

C. B. Gooderham has been appointed Dominion Apiarist of Canada. The Beekeeper, published at Peterborough, Ont., has the following to say of the new appointee: "Mr. Gooderham was born in England and came to Canada in 1908, residing first in Nova Scotia. He attended Truro Agricultural College and Macdonald College, Quebec, graduating from the latter as a Bachelor of the Science of Agriculture in 1916. In his final year, he led his class, specializing in entomology. After graduation, he went to Nova Scotia as Assistant Entomologist and foul brood inspector where he did splendid work in cleaning up the apiaries as well as teaching modern methods of beekeeping. In 1917 he came to the Central Experimental Farm, Ottawa, as assistant to the late F. W. L. Sladen, and has had charge of the apiary. The Department of Agriculture has been fortunate in their choice of Dominion Apiarist, as other institutions, having recognized his worth, were anxious to secure his services."

* * *

Beekeepers in the cotton belt will be pleased to learn that, so far as experiments have been conducted by South Carolina and other states on sweetened poisons, these apparently have no advantage over poisons not sweetened, for control of the cotton boll weevil. Some beekeepers in the cotton belt have expressed the fear that the use of sweetened poisons would destroy honeybees.

* * *

The Nebraska Honey Producers' Association at its annual meeting, held at Lincoln on Jan. 3, had the largest attendance of beekeepers in its history. At the business meeting, C. E. Carhart of Wayne was reelected president, and Charles E. Gaydou of Blair, secretary. It is the plan of the association to increase its membership in a state-wide drive by several hundred members.

* * *

In a press article prepared for the San Francisco Chamber of Commerce, R. B. Calkins recently said: "California bees have just finished gathering their 1921 crop, that may take 50 trains of 50 cars each for its transportation. California apiaries add three million dollars annually to the production record of the state. * * * * The largest part of the California honey crop of ten million pounds a year is marketed thru the beekeepers' organization, the California Co-operative Honey Producers' Exchange. This organization, with business and collecting branches thruout the state, sells to honey jobbers and to the bottling trade thruout the United States, and also bottles a large amount of excellent honey under its own label."

TALKS TO BEGINNERS

Geo. S. Demuth

ALTHO thruout most of the United States and Canana, February is the time for beekeepers and prospective beekeepers to study their books and bulletins on beekeeping and to attend beekeepers' conventions, instead of doing any thing with the bees, it is now time for those who have not yet secured their bees to make arrangements to do so.

Various Ways to Secure a Start in Bees.

Some of the 1922 class of beginners will purchase established colonies already in first-class condition from some reliable dealer or a neighboring beekeeper. For many this is by all odds the best way, since starting right makes the going easier later. Some will purchase unproductive colonies not in first-class condition at a much lower price from someone who has not learned to make bees profitable, and then gradually correct the faults until the colony is in first-class condition, thus paying in labor a part of the cost of the equipment. Some will purchase bees probably of inferior stock in box-hives or log gums, then in the spring transfer the bees to modern hives, and later change to better stock by killing the old queen and introducing one of better stock purchased from some reliable queen-breeder. Some will secure their first colonies by cutting bee-trees in the spring and transferring the bees to modern hives. Some will purchase either packages of bees, each with a queen (shipped in wire-cloth cages without combs) or two or three frame nuclei (small colonies with combs) from a breeder or a dealer, and when these arrive put them into hives already prepared. Some will wait until the swarming season when they will take to a neighbor beekeeper some empty hives prepared for receiving swarms and arrange for him to hive swarms in them. Some will not think of keeping bees until a stray swarm comes to their place and clusters on a tree or fence as if asking to be put into a hive. This classical and romantic method is the way many of our greatest beekeepers, including A. I. Root and the late Dr. C. C. Miller, made their start.

Which of These Ways Is Best?

Those who are sufficiently interested in how to obtain a start in bees to be reading this page, should arrange to secure them in time for the bees to store a crop of honey this season. This rules out the purchasing of swarms, which usually do not issue, especially in the North, until the midst of the honey flow. There is left a choice of any one of the various ways of securing established colonies mentioned above or purchasing either package bees or nuclei in time for them to build up to full strength for the main honey flow.

The main honey flow of the season may be expected to begin as early as March and April in some parts of the extreme South, and as late as the latter part of June in the far North and some parts of the alfalfa region of the West. Since it requires six weeks or more for a colony to build up from a two or three pound package or a two or three frame nucleus to full strength, it would be necessary to have these bees delivered in the North in April or early in May, to have them ready for the main honey flow in June and July. In the South where the main honey flow comes much earlier, there would not be time to build up to full strength from package bees or nuclei, for the breeders and dealers usually are not ready to deliver package bees and nuclei until about the first of April. But in some parts of the South where there is a later honey flow, package bees or nuclei can be built up in time to gather surplus honey.

Since not many package bees or nuclei will be shipped until after April first, methods of handling these will be described later; but those who expect to procure bees in this way will do well to order them soon, before the best breeders have booked orders for all they can supply.

In the South those who expect to purchase established colonies should do so this month or next, especially in regions where the honey flow comes early. In the North it will be just as well to wait until April or May; tho, if an opportunity to purchase good colonies of bees presents itself earlier there is no reason why they should not be purchased now, except that it is better, when possible, for the beginner to avoid the chances of winter loss by waiting until after the cold weather is over.

Great Difference in Value of Colonies.

There is a great difference in colonies of bees that may be available for purchase. Some colonies are in odd-sized hives which do not fit standard equipment. Some are in poorly made hives, having crooked combs or ill-fitting frames, which can not easily be taken out of the hive for examination; and some are in box hives, hollow logs, or nail kegs with the combs built solid to the sides; while other colonies are housed in new factory-made hives of standard size, cut with great accuracy so that the combs can be readily taken out for examination and other necessary work done without irritating the bees. Some colonies, even in the very best hives, have such poor combs for brood-rearing that the bees can not build up as strong for the honey flow as when the combs are more nearly perfect; while in others the beekeeper used full sheets of foundation in the brood-frames and by careful management when the combs were built secured nearly perfect combs, having almost all of its cells of the size for rearing worker bees instead of drone-cells or badly distorted cells that are neither drone size nor worker size. Colonies of bees supplied with a set of good combs are worth considerably more than colonies having crooked combs or combs having a large percentage of drone-cells or misshapen cells, for these will have to be replaced by good combs before the colony can be in first-class condition. Some colonies are of scrub stock that may be cross and ugly to handle, poor honey gatherers or too much inclined to swarm to be profitable in storing surplus honey; while other colonies are of good stock, their ancestors having been selected for years for gentleness, energetic work, good wintering and less tendency to swarm. Some colonies may have at this time only a few pounds of honey, not enough to last until nectar can be had from spring flowers; while others may be supplied with 30 to 40 pounds of honey. Some colonies have only enough bees to occupy one, two or three spaces between the combs when the outside temperature is near the freezing point; while others are so strong that the cluster of bees occupies six, seven or eight of the spaces between the combs at freezing temperatures outside. In some colonies the bees will have aged so much during the winter that they will die off faster during the spring than young bees can be reared to take their places, so they can not possibly attain full strength in time for the honey flow without help; while in other colonies having better conditions for winter, the bees are still young in the spring when they begin brood-rearing, enabling them to build up rapidly to great strength. Some colonies have old queens that will not be able to lay enough eggs during the spring to enable the colony to build up to profitable strength in time; while other colonies have young queens able to furnish enough eggs to build up mammoth colonies in time to gather the crop of honey. It will thus be seen that colonies of bees in the spring are worth all the way from the value of the wax in the combs and the kindling wood in the hive (about $1.00), minus the cost of rendering the wax and making the kindling, up to $20 or more for strong colonies having a good queen of good stock, in good hives, having good combs and supplied with 25 to 30 pounds of honey.

How to Judge the Colonies.

With such a variation in the value of colonies of bees, how can a beginner choose good ones? Out of all these qualities, since it is good colonies of bees that are wanted, the most important things to look for at this time are the size of the cluster and the amount of honey in the hive. Most of the other defects can be remedied later without spoiling the chance of securing a crop of honey.

.The size of the cluster can be determined by opening the hive and looking down from the top to see how many of the spaces between the combs are occupied by the bees. The cluster should occupy not less than four of the spaces between the combs when the outside temperature is near freezing. In well-packed hives they should occupy five or more spaces, and in a bee-cellar they should occupy not less than six or eight spaces.

Some idea as to the amount of honey in the hive may be had by lifting the hive, then lifting an empty hive, noting the difference in weight. A more accurate way, of course, is to weigh them. The hive that is well supplied with honey should weigh 25 pounds more than an empty hive and combs of the same kind.

In selecting colonies, if the choice lies between a colony that was a last season's swarm and the parent colony from which it or some other swarm came, it is usually better to choose the parent or old colony, for it is the one which has a young queen.

Often colonies can be purchased for less than they are worth from people who do not know how to make them productive. It is not often possible to buy bees at a bargain from a successful beekeeper. In buying full colonies it is therefore usually necessary to get them from a breeder or dealer or from some one who has not been successful in beekeeping. Usually the latter class of colonies are not in first-class condition; but, if they are strong and well supplied with honey, the beginner will gain some valuable experience by buying them and putting them in good condition. For the ambitious beginner who has a little time to devote to it, it is a great pleasure even to purchase bees in box hives and transfer them to modern hives. To purchase unproductive colonies and make them productive brings a feeling of satisfaction in achievement that is worth something.

In deciding on the price to pay for bees in box hives, odd-sized hives or poorly made and ill-fitting hives, the beginner should study his catalog of beekeepers' supplies to find the cost of new complete hives, for this must be added to the price paid for the bees if the old hives are not usable. By studying the catalog carefully the beginner will be enabled to judge as to the value of the modern hives in which bees may be offered for sale in his vicinity. Factory-made hives are usually made more accurately than those made by hand or at a local planing mill. The standard size used most extensively in this country is the 10-frame Langstroth hive. The 10-frame Jumbo and the 11-frame Jumbo (Modified Dadant) are also standard sizes and are preferred by some producers of extracted honey.

BEES, MEN AND THINGS

(You may find it here)

MUCH has been said about selling honey in 5-pound and 10-pound pails at about the double the wholesale price. It cannot be done in Florida, as we have homemade cane syrup on the market all the time at low price.”—Ward Lamkin, Liberty County, Fla.

“I suggest that your label department accept the suggestion of the Editorial department, and arrange to cut out the “extracted.”—Elton Warner, Buncombe County, N. C.

“You will notice by the corporation envelope in which this letter is sent that our village has adopted the old straw skep as part of its crest, and it is also in the corporation official seal.”—T. A. Chapman, Beeton, Ont.

“Last spring, thru the incentive of Gleanings, I had painted a large sign on both sides, ‘Honey for Sale,’ and placed it on my lawn at the side of the state highway where it could be read by parties approaching from either direction. As a result my entire honey crop was sold at home at a very good price. This sign will be worth from $50.00 to $75.00 to me each year in the future, according to the size of my honey crop. Yours for home bees, birds and flowers.—S. E. O'Neel, Jefferson County, Ind.

“The Department of Agriculture is doing some very extensive work by way of inspection of apiaries and educational lines. We can now boast of a chief apiary inspector, and seven or eight deputies, of whom I am one. I inspected over 5,000 colonies of bees the past season in 500 different yards. We have a few persons that keep bees, and quite a few that just let the bees stay around, but the European and the American foul brood are making a good many read up and get wise. There are all kinds of hives being used, even crocks, and I have seen beer kegs in several yards with bees flying in and out the bung-hole. Hundreds of pounds of beeswax are wasted by the beekeepers leaving boxes where the bees have died for the worms and mice to eat up. If this could all be saved I believe the price of foundation would be much less.”—S. W. Uber, Indiana County, Pa.

“Only 300 miles off the north coast of Australia is Timor, the last link in an island chain sweeping from Singapore, the southeast corner of Asia, to the big south continent. Wild bees are numerous there, and in the mild climate of Timor build their comb in the open on the under side of the limbs of tall trees. One of the picturesque, tho perhaps painful, industries is the collection of the nests by nearly naked native tree-climbers. The people feast on the honey and sell the wax which forms one of the chief exports of the islands.”—National Geographic Society's News Bulletin, Washington, D. C.

“I got 28,000 lbs. of honey for the entire year of 1921 from 260 colonies and increased to 360.”—C. C. Cook, Lee County, Fla.

“While working around my hives Dec. 29 I noticed drones flying out and in the hives almost as if it were spring time.”—G. O. Pharr, Iberia, La.

“Clover was so short here if the bees got any honey from it in Monroe County they had to get on their knees to do it.”—Louis F. Wahl, Monroe County, N. Y.

“Bees are wintering well to date, Jan. 12, but light in stores which is mostly sugar fed late last fall. Bees will need close attention the coming spring to prevent starvation.”—T. C. Asher, Campbell County, Va.

“My best colony produced for me 190 sections last season, varying in weight from 12½ ozs. to 16 ozs. I should say the average per colony was about 130 sections. We secured 35c per section, and even at the latter figure our venture has been very profitable.”—Harold Q. Breisch, Schuykill County, Pa.

“The Cuban beekeeper of today deals only with black (German) bees, or the Italian species. There are several species of diminutive Cuban bees, entirely stingless; they are now kept only as a curiosity in little boxes or the holes of nearby trees. The products of the Cuban apiaries are about 1,000,000 pounds of strained honey and comb combined.”—Bureau of Public Service, Havana.

“I was registering a letter at the Miami (Fla.) postoffice, when the clerk remarked on the firm name, ‘The Pettit Apiaries.’ He said, ‘Do you keep bees down here?’ ‘No,’ I said, ‘I keep bees in Ontario in the summer and come down here to rest while they sleep in winter.’ ‘Oh, yes,’ he said, ‘they seal it up in the winter, don't they?’ I said, ‘Yes.’ What else could I say? Then he went on to explain: ‘Down here the beekeepers can cut honey all the year around.’ Mentally I could see his picture of people cutting combs out of skeps or box hives. It fitted with his former vision of bees industriously sealing honey while the snow piled high over their hives, and—I was speechless.”—Morley Pettit, Georgetown, Ont.

OUR HOMES

A. I. ROOT

Know ye not that ye are the temple of God, and that the Spirit of God dwelleth in you? If any man defile the temple of God, him shall God destroy; for the temple of God is holy, which temple ye are.—I. Cor. 3:16, 17.

When a man's ways please the Lord, he maketh even his enemies to be at peace with him.—Prov. 16:7.

If ye had faith as a grain of mustard seed ye might say unto this sycamine tree, Be thou plucked up by the root, and be thou planted in the sea, and it should obey you.—Luke 17:6.

IN Our Homes for September I told you how a single person was, as I believe, led to change his mind very suddenly in answer to prayer. I am now going to try to tell you how quite a respectable crowd of people all of a sudden turned about and took "a back track," *also* in answer to prayer. I hardly need tell you that all my life I have been opposed to the tobacco habit—not because it is a notion of mine, but because I have felt sure it is harmful to humanity at large, young and old. My father used it many years; in fact, the habit became so firmly fixed on him that he was scarcely ever seen without his pipe. He finally began failing, and was feeling much cast down because old age seemed to be coming on when he should have been almost in his prime. Some good sensible doctor advised him to try going without tobacco. It was a terrible task he had before him, especially for a few days; but in a few weeks the gain was very apparent. People joked him wherever he went by remarks something as follows:

"Why, brother Root, what is up? You seem to be getting young again."

He did get back his health and happiness, and lived to a fairly good old age. Well, when I started out to serve the Lord in place of A. I. Root, one of the first things I was called on to do was to furnish employment to the needy people of our town; and very soon I had men and women, and girls and boys, at work for me. When our first brick building beside the railway track was completed in the fall of 1878, and we had moved in, I was much annoyed by having the carpenters and others squirt tobacco juice all around the premises. I took this, however, as a kind of necessary evil, and did not say much about it. But one day in passing some boys on the street, one of them, with a cigar in his mouth, said to his companion, "Johnny, I don't see you smoking any more. What is the trouble?"

"Well, I don't have any money to buy cigars; but when school is out I am going to work for Mr. Root again, and then I shall have money so I can learn to smoke."

This happened so long ago that I can remember only imperfectly the particulars; but I decided then and there that if my giving employment would help boys buy tobacco it was time to call a halt; and I think I made some kind of a rule that no boys who used tobacco would be given employment until they gave up the use of it. I do not think we had any law then in regard to selling tobacco to minors; but the question soon came up as to what age a boy ceases to be a boy and becomes a man, and it was not long before I had found I had run against a snag. I was interfering with personal liberty, and that same "personal liberty" is being talked about, as you may know, just now. I told the men folks who used tobacco the story about my father, and I suggested to them to try giving it up, and some of them did try. I remember that one day my foreman said laughingly he wished that a certain carpenter would go to using tobacco again, and gave as a reason that since he had stopped or tried to stop he was not worth half price. The matter was talked over, pro and con. I can not remember just now the particulars, but I had for once in my life a little experience with what might be called a "strike." My help talked it over, and I was asked to back down in what I had undertaken to do in regard to the tobacco habit. I do not think I had prayed over it as I ought to have done; and I am inclined to think that I was at least just a little unreasonable; but before I knew what was going on, the engine was shut down; my help, old and young (with very few exceptions), including the women in the office, got their dinner pails and left the premises. Let me digress a little right here.

Some years before this event occurred a bright little girl with a remarkably sweet and pleading face came to me for work. I said to her something as I did to the boy Jacob, "Why, my little friend, are you old enough to work in the office?"

She replied with a very pretty girlish smile that she knew she was young, but she wanted to help her widowed mother. She took hold of the work in a way that surprised me; and after she had been with us for about two years she came to me and said something as follows: "Mr. Root, I have a very dear friend who is wasting her time and talents by going to dances and being out late nights, etc. If you could give her a place here in the factory, say to help me, for instance, I think we might get her interested in something of more account in this busy world of ours. I *must* get her away from the crowd she is now going with.''

I was particularly pleased to know that Bessie (in fact, I am now talking about the one we called ''Queen Bess'') had in mind ''treasure in heaven'' as well as in this world; and those two women, or young girls, got to be in a little time the life of the business, especially so far as filling orders promptly and accurately was concerned. These two opened the mails, and looked after having every letter promptly answered and instructions faithfully followed. While these two bright girls worked at their desk, busy as the bees, they sometimes hummed in a low tone snatches from Gospel Hymns which were just then being copied and sung by almost everybody; and altho I have, during my long life, listened to many great singers, I am sure I have never heard anything from anybody that equaled the singing of those two particular friends of mine. Well, when the strike started up, to my great surprise and astonishment my gentle friend and expert helper, before I knew it, had turned right about, and was, I might almost say, leading the strike. Her brother (one of our men) was a user of tobacco. When I saw them desert their post, one after another, and go out with their dinner pails, I was so surprised that I am afraid I actually forgot my emergency prayer, ''Lord, help.'' The strikers were almost half a mile away in their march before I came to my senses. But I did finally go into a little room where I had been in the habit of praying, and I think my prayer was something like this: ''O Lord, thou knowest all about this trouble. Thou knowest, too, that thy servant is weak and human, and full of mistakes and blunders. Now please take him and my mistaken friends into thy hands and care; and may the Holy Spirit follow them and convince them of the mistake they are making, where I seem to have failed.''

As nearly as I can find out, at *the very time* I uttered this prayer the ''procession'' came to a halt. Bessie was the leader. She called a halt and said something as follows:

''Please hold on a minute, friends. I am afraid we are making a mistake. I am sure Mr. Root will be reasonable if we go back and tell him we should like to go back to work.''

Then the procession turned around and started back. I cannot remember the particulars; but one of the other girls in the office suggested that in the future we should take ten minutes every day just before the noon whistle blew. During this interval of ten minutes we were to sing a hymn, and I, or somebody among the helpers, would close with prayer. This time was also to be devoted every day to having the employer and the employees become acquainted with each other, and, by discussing things of mutual interest, to promote the welfare of all. At this juncture each hand contributed a day's work toward the purchase of an organ for use at these exercises. This was done in the summer of 1879, and the services were held regularly till Sept. 1, 1885.* About this time my health failed; and owing to the increase of business and my enforced absence from home it was deemed necessary to discontinue the noon service, especially as it seemed to be a difficult matter, in my absence, to get the help together upstairs.

Now, this tobacco matter is a great question; and the cigarette habit that has been coming in of late is a *still* greater question, especially where cigarettes are sold to boys of almost any age who happen to have a nickel to pay for them. We need much wisdom on both sides. Some time ago I remonstrated with the editors of the *Scientific American* because of the full-page advertisement printed in their columns recommending cigarettes; and as it seems to touch both sides of the question I submit a part of the correspondence below. Below is my letter:

September 24, 1921.

Scientific American Publishing Company.

Attention Mr. Chas. Allen Munn, Publisher.

My good Friends:

Now, you haven't asked me for advice, or even to give opinion, but I am going to venture one nevertheless. Had you kept the cigarette advertisements out of the weekly, especially the full-paged advertisement, in *colors*, is it not possible it would not be necessary to change it to a monthly? I am sure a good many people like myself have noted the inconsistency of such a glaring advertisement in a journal devoted to a better humanity and a better world. Some years ago I ventured a remonstrance, and one of the Munn's, I think it was, wrote me that he felt a good deal as I did about the cigarette advertising.

Now, I don't know what your plans are for the monthly, but I do hope and *pray* that these glaring advertisements of cigarettes, so offensive to many people (and I think the best people in the world), may be eliminated.

I am now close to eighty-two years old. Of course, I wasn't able to read very intelligently when the first Scientific American came out, but when I was ten years old I was so much taken up by it that I borrowed the back numbers and read them over and over; and when I was somewhere about fourteen or fifteen, I wrote one or more articles for the Scientific American, that were published.

May the great Father above guide you and direct you in whatever course you may take, is the prayer of

Your old friend,
A. I. Root.

P. S.—Since writing the above, the Scientific American, dated September 24, 1921, is just at hand, and I want to say to you the article on the "Divining Rod" is worth the price of the Scientific American the whole year. It's worth that to me anyway; and now comes the reason why it should be continued weekly: The promoters of this fraud (and I think quite probably it is fraud) will be taking thousands of good dollars from good, honest men, while if a paper like this came out once a week it might save a lot of people from getting entrapped. I am sure you see the point; and I hope to live long enough to see the Scientific American changed back to a weekly, or to see some other journal take its place (or try to take its place) if it has got to come. With all that's going on nowadays in the way of wonderful discoveries in science, we must have some periodical that *can* sift the wheat from the chaff, just as you have been doing for the past seventy years or more. Your old friend,

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*Perhaps it would be well to say right here that my stenographer, who is taking down these notes, W. P. Root, played that organ at every noon service, with scarcely an omission, during all those six years.

A. I. Root.

SCIENTIFIC AMERICAN
(Established 1845)
PUBLISHING COMPANY
MUNN & CO.
New York, Oct 4, 1921.

Dear Mr. Root:

Your very good letter addressed for the attention of Mr. Chas. Allen Munn is received, and in his absence I beg to thank you for your kindly expressions toward the Scientific American, also for your subscription for a half year to the new monthly.

It is a great stimulus to the publishers and to the editors to hear from a reader who has been subscribing for and reading the Scientific American such a great number of years.

You have made some pointed suggestions, which gives us the privilege of answering and explaining. In the first place, it would be utterly impossible for publications to exist in their present form today, were it not for the patronage of advertising. We could not begin to pay the writer, illustrator, engraver, printer and paper manufacturer their present prices were it not for the advertising.

It has always been the policy of the Scientific American very carefully to censor all advertising which is admitted to its columns, and we not infrequently decline advertising because it does not admit of our strict censorship. That particular class of advertising (cigarettes) does not, as you say Mr. Munn has told you, appeal to us; nevertheless this advertising is appearing in almost all the reputable journals. More than that it is appearing in practically all of the daily press. Cigarettes are on sale at your department store, your newsstand, your stationery stores, in fact any place you turn. If you abhor the exploitation of cigarettes, and carry your point to boycotting those who exploit or handle them, I am fearful you would not be able to carry on your daily routine of life. If the Scientific American had declined this advertising, it would have in the past year or two made a serious dent in our revenue, such a dent as we could not afford. I hope therefore, my dear sir, that you will close your eyes if possible to this class of advertising, and bear with us for the reasons as stated.

The first copy of the Scientific American Monthly contains two cigarette advertisements, which I feel sure are going to be objectionable to you, but inasmuch as we were under contract to run these advertisements, we had no alternative, tho be assured we would have greatly preferred to omit them.

We are working toward the perfection which, as an old friend, you would like to see, and we sincerely hope that even if you have outlived three score and ten, you will live to see it and rejoice with us in it. A. C. Hoffman,

Secretary.

Blueberries in the North, and Blueberries in Florida.

The Department of Agriculture has just sent out a most valuable bulletin of over 50 pages and almost as many beautiful illustrations, entitled, "Directions for Blueberry Culture." It is from our good friend, Dr. Coville (see page 653, October issue). It makes the matter very plain in regard to propagation. On account of the beautiful and expensive plates the price is 30c. Address Supt. of Documents, Government Printing Office, Washington, D. C.

From the pamphlet I make an extract as below:

Great interest has developed recently in Florida on the subject of blueberry culture. Extravagant and misleading statements have been published and thousands of ordinary wild bushes have been sold at high prices, the purchasers being led to believe that the plants were of specially selected or adapted varieties. One company, located near Tampa, published as the frontispiece of a blueberry advertising pamphlet a natural-size illustration of a quart box of one of the United States Department of Agriculture selected hybrids, without designating it as such. The reader of the pamphlet would naturally believe that the bushes the firm was selling would produce such berries as were shown in the illustration. The real success of a single blueberry plantation near Crestview, in northwestern Florida, set with selected plants from the near-by woods, is chiefly responsible for the present wave of blueberry exploitation in that State. The best advice that can be given at present to those desiring to experiment with blueberry culture in Florida is to make certain that any plants they buy are as represented by the seller, to be sure that alleged improved varieties are not in reality ordinary wild blueberries, perhaps inferior to wild bushes that the purchaser might find in his own neighborhood by careful search. The selected hybrids described in this bulletin are of northern parentage and probably will not thrive in Florida because Florida winters are not sufficiently cold to give these plants the chilling they require in winter. The United States Department of Agriculture has already begun the breeding of improved blueberries from species native in Florida, but it greatly desires better southern breeding stocks than it now possesses.

Mrs. Bradshaw (see page 653, October) informs us she gets from the swamps and woods the plants which she advertised.

Hubam Clover.

Sirs:—We purchased four ounces of Hubam clover seed last spring, and planted it by hand on one acre. It grew from five to eight feet tall and produced 556 pounds of clean seed in the hull. I believe it is one of the greatest crops that ever has been planted here.

It bloomed for three months, and a few stalks are blooming yet that we never cut. The bees worked from morning until night. There seemed to be a continuous honey flow as long as there was bloom.

We are for bees and Hubam clover. I would like to see this in Gleanings if you have the space.

Rule Brothers.

Terlton, Okla., Route 1, Oct. 5, 1921.

Gentlemen:—About a year ago I purchased an ounce of annual sweet clover seed. I planted about half of it and sent the rest to my cousin, Miss Norah Goodsell, Battle, Sussex Co., Eng. I obtained about the same results as everybody else, but I thought you would be interested in foreign results.

I will write the letter word for word that I received, telling the results as follows:

> "First of all, I will tell you about the clover. It was sown April 29th and came up May 6th. It was just a week coming up. The weather has been dry. We have had only little showers, no rain at all you might say. As soon as a shower came, the sun was out the next minute burning up things. The fields are all burnt up, no green grass at all. Dad said it was the worst year we could have had for clover. Well, it is to the height of 4½ feet now. It began blooming the first of July. Dad is going to thresh it out when it gets ripe. It grew better than anything we saw this summer."

It looks like a good thing for England, doesn't it? Samuel Goodsell, Jr.

Cameron, Ill., Oct. 4, 1921.

KIND WORDS OF SYMPATHY.

May God abundantly bless the dear friends who have written me such touching letters of sympathy in my great bereavement. I have said again and again, surely I must print *this one*, but there are so many this brief note will have to answer. My department of Gleanings, from this on, must be given, at least mostly, to the betterment of a sinful humanity and a sinful world. A new baptism of God's Holy Spirit has come into my life.

More than ever, your old friend.

Dec. 13, 1921. A. I. Root.

Classified Advertisements

Notices will be inserted in these classified columns for 50c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column, or we will not be responsible for errors. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISEMENTS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

Jay Smith, J. F. Moore, Bert Smith, J. G. Burtis, Clarence Foote, Woodward Apiaries, Edw. A. Winkler, Edgar Williams, Adam Kalb, Joe C. Weaver, J. H. Corwin, S. Rouse, A. J. Lemoine, Hardin S. Foster, Livingston Seed Co., Michigan Honey Producers Exchange, Allen Latham.

HONEY AND WAX FOR SALE

FOR SALE—Honey in 5 and 60 lb. cans. Van Wyngarden Bros., Hebron, Ind.

FOR SALE—Buckwheat honey in 5-lb., 10-lb., or 60-lb. cans. H. B. Gable, Romulus, N. Y.

FOR SALE—White and amber honey in 5-lb. pails. R. C. Wittman, St. Marys, Pa.

FOR SALE—Clover honey in new 60-lb. cans. None finer. W. X. Johnston, Port Hope, Mich.

FOR SALE—White clover and aster honey in 60-lb. cans and ten-pound pails. John S. Field, Brooksville, Ky.

FOR SALE—Clover honey from the capping melter. Good for cooking, baking, etc. J. D. Beals, Oto, Iowa.

FOR SALE—Clover, amber and buckwheat honey. 60-lb. cans and 5 and 10-lb. pails. C. J. Baldridge, Kendaia, N. Y.

FOR SALE—Choice clover honey, 15c; buckwheat, 10c per pound. Two 60-lb. cans to case, f. o. b. here. Wm. Vollmer, Akron, N. Y.

FOR SALE—Buckwheat honey in 60-lb. cans, one can to case, liquefied, $6; 2 cans to case, granulated, $10.80. John J. Lewis, Lyons, N. Y.

FOR SALE—Spanish needle-heartsease honey, fine body and flavor. Write for price. State quantity wanted. F. W. Luebeck, Knox, R. D. No. 2, Ind.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gal. barrels. Samples and price on request. A. I. Root Co., 23 Leonard St., New York City.

FOR SALE—Extra choice extracted white clover honey, put up in new 60-lb. cans and 5-lb. pails. Sample 20c, same to apply on first order. David Running, Filion, Mich.

FOR SALE—Clover, basswood or buckwheat honey, comb and extracted, by the case, ton, or carload. Let me supply your wants with this fine N. Y. State honey. C. B. Howard, Geneva, N. Y.

FOR SALE—Extracted honey, clover, 15c per pound; amber, 10c; two 60-lb. cans to case; amber in barrels, 8c; in five-case or five-barrel lots, 5% off; in ten-case or ten-barrel lots, 10% off. H. G. Quirin, Bellevue, Ohio.

FOR SALE—12,000 lbs. of choice white clover honey, well ripened, put up in new 5 and 10 lb. ville, Ky. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—No. 1 white Wisconsin extracted honey, well ripened, put up in new 5 and 10 lb. pails and 60-lb. cans. Write for prices. August Lotz Co., Boyd, Wis.

FOR SALE—White clover honey in 60-lb. cans at 12c per lb., same honey in 5-lb. pails at $10.00 per doz. f. o. b. Waterville, Ohio. F. W. Summerfield, Waterville, Ohio.

FOR SALE—Selected No. 1 comb honey, $35 per carrier of six cases, 24 sections to case. Clover honey in 10-lb. pails, $9.50 per case of six pails. J. D. Beals, Oto, Iowa.

SUPPLY your trade with finest white sweet clover honey, liquid. Case of six 10-lb. pails, $9.40; case of 12 5-lb. pails, $9.60; a 12-lb. can by paid parcel post, $2.75. C. S. Engle, 1327 E. 23rd St., Sioux City, Iowa.

HONEY FOR SALE—In 60-lb. tins, water-white orange, 14c; water-white clover or white sage, 13c; extra L. A. sage, 11c; N. Y. State buckwheat, 10c, for immediate shipment from New York. Hoffman & Hauck, Inc., Woodhaven, N. Y.

RASPBERRY honey, blended with willow-herb, put up in 60-lb. cans. In order to close out quickly will sell for 12c a lb. We have some raspberry mixed with a small quantity of goldenrod for 10c a lb. Sample of either kind, 20c, which may be deducted from order for honey. Elmer Hutchinson & Son, Lake City, R. D. No. 2, Mich.

HONEY AND WAX WANTED.

WANTED—Extracted clover honey. L. K. Hostetter, Lancaster, R. D. No. 5, Pa.

WANTED—Honey, section, bulk comb and extracted. Elton Warner, Asheville, N. C.

WANTED—Extracted honey. Give lowest price and particulars in first letter. L. A. Junod, Greenville, Ill.

BEESWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED—Well-ripened white clover extracted honey. Mention price f. o. b. Mahwah. Prompt remittance. John Vanden Berg, Mahwah, N. J.

I AM in the market for white clover, basswood, or amber honey. Send sample and quote me your lowest prices delivered f. o. b. Preston. M. V. Facey, Preston, Minn.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

WANTED—Beeswax. We are paying 1 and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address, so we can identify it immediately upon arrival, and make prompt remittance. The A. I. Root Co., Medina, Ohio.

FOR SALE.

ROOT'S GOODS AT ROOT'S PRICES. A. W. Yates, Hartford, Conn.

FOR SALE — "SUPERIOR" FOUNDATION, "quality unexcelled." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

FOR SALE—10 frame hive-bodies in flat. C. H. Hodgkin, Rochester, Ohio.

HONEY LABELS—New designs. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE—A full line of Root's goods at Root's prices. A. L. Healy, Mayaguez, Porto Rico.

FOR SALE—Large quantity of new and used bee supplies. George Olson. Hematite, Mo.

YOU will make no mistake in ordering your comb foundation of E. S. Robinson, Mayville, N. Y.

CYPRESS beehives, supplies and genuine Hubam clover seed for sale. J. Tom White, Dublin, Ga.

FOR SALE—50 shallow extracting supers full of comb. Write for prices. M. F. Perry, Bradentown, Fla.

FOR SALE—Standard 8 and 10 frame dovetail hives, $1.75 and $2.00 each. P. D. Roban, Waverly, Minn.

PORTER BEE-ESCAPES save honey, time, and money. Great labor-savers. For sale by all dealers in bee supplies. R. & E. C. Porter,. Lewiston, Ill.

ROOT'S BEE SUPPLIES—For the Central Southwest beekeepers. Beeswax wanted. Free catalog. Stiles Bee Supply Co., Stillwater, Okla.

FOR SALE—Good second-hand 60-lb. cans, two cans to a case. Boxed at 40c per case f. o. b. Hugo. A. H. Schmidt, Hugo, Minn.

NEW Root eight-frame Danz. comb honey supers, in packs of five at 90c each. Same in shallow extracting supers at 75c each. Stover Apiaries, Mayhew, Miss.

FOR SALE—1000 new shallow Danz. frames, 17 x 5⅜ in., Root make. In flat, 100 per crate. $5.00, or $40.00 for the lot f. o. b. here. Adams & Myers, Ransomville, N. Y.

FOR SALE—Good second-hand 60-lb. cans, two cans to a case, boxed, at 60c per case f. o. b., Cincinnati. Terms cash. C. H. W. Weber & Co., 2163 Central Ave., Cincinnati, Ohio.

SPECIAL SALE—Low price for 30 days on 1-story 10-frame single-wall dovetail hives, KD in packages of 5. Material and workmanship guaranteed to please. Write for price stating quantity wanted. A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—The Custer Battlefield Apiaries with complete equipment for extracted honey. We have the best of everything and it must go. Highest average records ever made. Don't write unless prepared to buy. The Custer Battlefield Apiaries, Hardin, Mont.

FOR SALE—New cypress bottom-boards, standard 8-frame, 50c; 10-fr., 60c. One piece cypress covers, best made, 8- fr., 50c, 10-fr., 60c. 5% reduction in lots of 100. 100 twin-mating boxes, N. P., 50c each. All prices f. o. b. Macon, Miss. Geo. A. Hummer & Sons, Prairie Point, Miss.

FOR SALE—To further reduce our large equipment, we offer a full line of NEW and SLIGHTLY USED Jumbo and standard Langstroth bee supplies of Root manufacture. We also offer full colonies of bees in Jumbo and Langstroth hives. Complete list free. We can save you real money. No disease. The Hofmann Apiaries, Janesville, Minn.

FOR SALE—25 standard and 20 Jumbo hives with metal covers. 10 5 x 5 and 15 4¼ x 4¼ comb supers all 10-frame, nailed and painted, some never used. Best offer takes part or all. 15 colonies in Jumbo hives, $10.00; 10 colonies in Modified Dadant hives, $12.00. Italians. Will ship in May. A. H. Hattendorf, Ocheyedan, Iowa.

FOR SALE—Jumbo and Standard hives with bees; also good 10-frame hives, metal roofs and reversible bottoms, with or without drawn combs. No disease. Horace Lamar, Liberty, Ind.

FOR SALE—70 10-fr. brood-bodies with frames; 25 shallow extracting supers with frames, drawn comb or foundation; 25 4¼ x 1⅞ section supers with sections and full sheets foundation; 15 queen-excluders; 40 inner covers; 25 Porter bee-escapes; 75 3-quart pepper-box feeders; 3000 4¼ x 1½ cartons, boxes and supers, painted. Price $100. One foundation machine, 6-inch, $5.00; one foundation machine, 10-inch, $8.00; one foundation machine, 10-inch, $10.00; 500 4¼ x 1⅞ sections, $8.00; 50 lbs. super and brood foundation, $25.00. There are hive-stands and many other things, all for $150.00. M. E. Abernethy, Bristol, Vt.

BARGAIN in used Root quality standard supplies; reason for offering, changing from standard 10-fr. to larger hives. 20 deep supers with ten imperfect combs in each, suitable for extracting, only $2.00 each. 46 deep supers with 10 good brood-combs in each, $4.00 each; 11 deep supers, same as above, except metal-spaced frames, $4.00 each. All combs drawn from full sheets and wired. 60 7-wire wood excluders, a few never used, all good as new, 50c each; 90 deep empty supers, 60c each; 50 good bottoms, 25c each; 40 extra good bottoms, 35c each; 75 metal tops with super covers, 70c each; 80 complete new metal-spaced Hoffman frames in flat, $4.00; 100 used metal-spaced Hoffman frames, 4c each; 100 wood-spaced used Hoffman frames, 3c each; 300 shallow Hoffman frames, used, 2c each. Everything in good shape and mostly comparatively new stuff. Crated for shipping f. o. b. Allensville. First certified check or M. O. gets the goods of any part of offer. Porter C. Ward, Allensville, Ky.

WANTS AND EXCHANGES.

WANTED—Used 8-frame standard hives. L. G. Lockhart, Douglas, Neb.

ROYAL typewriter, $65.00. Will trade for honey, queens or offer. E. A. Harris, Albany, Ala.

WANTED—Used "Buckeye" hives. Give price and number immediately. James Cockburn, Wellsboro, Pa.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

500-EGG Queen incubator hatches 92%, like new, exchanged for bees or drawn Hoffman frames or combs. Offer please to Koch's Apiary, Mercer, Box 92, Wis.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa, Council Bluffs, Iowa.

WANTED—To exchange Italian bees and queens for a Planet, Jr. garden seed drill complete, good second-hand bee supplies, pure Hubam clover seed. S. Whann, R. D. No. 2, Polk, Pa.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

WANTED—10-frame standard hives and equipment, empty combs (wired) and bees (nearby). To interest must be warranted disease-free, good condition and priced right. L. W. Smith, Madison N. J. (or 56 William St., New York City).

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1922 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Son, Hamilton, Illinois.

LAND WANTED—I may be willing to exchange 50 or 100 colonies of bees for land, preferably in Arkansas or Mississippi. Bees are in standard 10-frame factory-made hives, painted white, everything first class, and bees absolutely free from disease. Write fully in first letter. C. M. Elfer, St. Rose, La.

ON 50-50 BASIS—South coast country apiary 25 miles from city of 150,000. 100 strong colonies Italian bees. Complete modern equipment. Room for several out-apiaries. 6000 lbs. of honey this year, while other crops were failures. 10 acres truck and strawberry land. New bungalow, barn, chicken and hog houses on rental basis. Team of horses, stock and farm implements. References required as to ability and honesty. Built up the business myself, beginning with nothing. It's an established business, not a speculation. Good schools and churches. A Thorstenberg, Sugar Land, Texas.

SEEDS AND PLANTS.

"We will not guarantee the purity of any seed advertised nor any nursery stock, as nurserymen ordinarily will not do this themselves; but any seedman or nurseryman advertising in our columns will have given us excellent references in advance, and our readers may consider this fact in their favor."—From Our Guarantee and Advertising Conditions.

HUBAM clover seed, ½ lb., $1.00; lb., $1.75; 10 lbs., $16.50. Noble Nursery, Noble, Okla.

PURE Hubam for a quick clean-up, oz. 20c; lb., $1.25; 10 lbs., $10.00. L. B. Harber, Mt. Olivet, Ky.

NORTHERN-GROWN HUBAM, $25 for 25 pounds, f. o. b. Ames. Blair Bros., Rt. 4, Ames, Iowa.

FOR SALE—Hubam clover seed, genuine Hughes strain. Seed scarified Free sample. Jas. H. Kitchen, Springfield, C. R. No. 5, Ohio.

GUARANTEED pure Hubam clover seed (unhulled), 1 lb., $1.10; 10 lbs., $10.00, postpaid. Hughes variety. Evan Jones, Williamstown, N. J.

FOR SALE—Yellow sweet clover, biennial, hulled, $6.00 per bushel; white, $5.00. R. L. Snodgrass, Augusta, Kansas.

BIENNIAL sweet clover seed, in the hull, at 5c a pound, or 5 lbs. postpaid, for $1.00. Sow a little and get it started around each apiary. Stover Apiaries, Mayhew, Miss.

CANADIANS, ATTENTION! Ontario-grown Hubam sweet clover seed for sale. $2.00 per lb., 20c per oz. Scarified and hulled in Superior machine. Buy in Canada and save exchange and duty. H. D. Clark, 41 St. Clair Ave., Hamilton, Ont.

HUBAM—The annual white blossom sweet clover. Guaranteed genuine Hughes strain, produced under cultivation. Gleaned and scarified seed. Cultures for inoculation will be furnished at cost. 14,500 seeds, 25c; lb. $2.00. Lloyd A. Sheffield, East Lansing, Mich.

HUBAM CLOVER—Produced under cultivation. Original seed (Ames, Iowa, strain) from Henry Field Seed Co., at $8.00 per lb. Purity of our seed attested under oath. Affidavit, each shipment. No weed seeds, none moldy, none better at any price. 1 lb., $1.45; 10 lbs., $13.50, delivered. Chas B. Phelps, Shawnee, Okla.

HUBAM—Gleanings has copy of certificate. Henry Field Seed Co., by Henry Field, Pres., attesting my purchase of seed, Feb. 10, 1920, and Jan. 11, 1921. No other sweet clover grown near ours. References gladly furnished. Note our delivered prices: 1 lb., $1.45; 10, $13.50. Chas. B. Phelps, Shawnee, Okla.

GUARANTEED NORTHERN-GROWN HUBAM SCARIFIED and recleaned seed, $75 for 100 pounds f. o. b. Ames. Blair Bros., Rt. 4, Ames, Iowa.

NORTHERN-GROWN HUBAM, GUARANTEED GENUINE scarified and recleaned seed. $25 for 25 pounds; $75 for 100 pounds, f. o. b. Ames. Smaller orders, $1.50 a pound. Prepaid. Blair Bros., Rt. 4, Ames, Iowa.

HUBAM CLOVER, NORTHERN GROWN—This seed has been recleaned and scarified by the Michigan Farm Bureau, and was originally grown from seed procured by Prof. Hughes. It was grown under cultivation in Missaukee County, Mich., and where the common bienial has not been grown. Therefore, there has been no possible chance for hybridity, and is the pure guaranteed annual variety of the famous Hubam clover. Now selling at $2.00 per lb. Quotations made on larger quantities. Earl L. Baker, Lake City, R. D. No. 3, Mich.

BEES AND QUEENS.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

TRY ACHORD'S BEES and QUEENS. Price list by return mail. W. D. Achord, Fitzpatrick, Ala.

FOR SALE—Italian queens, nuclei and packages. W. T. Perdue & Sons, Ft. Deposit, R. D. No. 1, Ala.

A card will bring our circular and price list of our reliable bees and queens. R. V. Stearns, Brady, Texas.

BOOKING orders now for early queens and package bees. Write for prices. Sarasota Bee Co., Sarasota, Fla.

WARNER'S QUALITY QUEENS—Write for illustrated catalog. Elton Warner, R. D. No. 1, Asheville, N. C.

FOR package bees and Italian queens, write Jones & Stevenson, Akers, La. Safe arrival and satisfaction guaranteed.

FOR SALE—Carload bees, nuclei, pound packages, full colonies. See our ad elsewhere. The Stover Apiaries, Mayhew, Miss.

PHELPS GOLDEN QUEENS will please you. Mated, $2.00; 6, $10.00; or $18.00 a doz. C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE—200 colonies Italian bees in two-story 10-frame hives. No disease. Modern outfit in A1 condition. H. A. Jett, R. D. No. 1, Box 155, Tucson, Ariz.

PACKAGE BEES—$1.50 per pound. Untested Italian or Carniolan queens, $1.25 each. See larger adv. Circular free. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

QUEENS OF QUALITY for 1922. Three-banded Italians only. After April 15, untested, $1.25; tested, $2.00. Satisfaction guaranteed. P. M. Williams, Ft. Deposit, Ala.

FOR SALE—500 colonies in 4 yards, with power extractor, easy terms, near English colony. Very healthful, wonderful flows, local market. M. C. Engle, Herradura, Cuba.

FOR SALE—Comb packages, 3 lbs. bees, one good untested queen on a standard frame of honey and emerging brood, $6.50; 2 lbs. same as above, $5.00. 15% down to book order. To be shipped April 20 to June 1. Queens introduced if wanted subject to be laying en route. Guarantee safe delivery. C. A. Mayeux, Hamburg, La.

PACKAGES, two-pound. Queens, day-old and untested. Thompson safety cages. Resistant Italians. Write for circular. James McKee, Riverside, Calif.

FOR SALE—3000 pounds of bees for spring delivery at pre-war prices. Rosedale Apiaries, Big Bend, La., J. B. Marshall and H. P. LeBlanc, Props.

FOR SALE—Early package bees, nuclei and queens. We handle 1800 colonies. Shipping season March 1 to June 1. Loveitt Honey Co., Phoenix, Ariz.

MY 1922 queens for sale. The Big Yellow kind, none better. Satisfaction guaranteed or money back. Price, $1.00 each, or $80.00 per 100. E. F. Day, Honoraville, Ala.

FOR SALE—Bright Italian queens, 1, $1.25; 12, $12.00. Write for prices of nuclei and pound packages. Safe arrival guaranteed. T. J. Talley, Greenville, R. D. No. 3, Ala.

WE are booking orders now for spring delivery for the famous "Colorado Queens." Send your order early so as to be sure to get your queens. C. I. Goodrich, Wheatridge, Colo.

BEES BY THE POUND — Also QUEENS. Booking orders now. FREE circulars giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas, E. B. Ault, Prop.

FOR SALE—Golden Italian queens ready May 1. 1 queen, $1.25; 6, $6.50; 12, $12.00; 100, $85.00. Virgins, 50c each. Write for prices of nuclei. W. W. Talley, Greenville, R. D. No. 4, Ala.

FOR SALE—Two-pound packages three-banded Italian bees with queens, $5.25 each; 10 or more, $5.00 each. One-fourth down books order. Satisfaction is my guarantee. J. J. Scott, Crowville, La.

FOR SALE—100 or more colonies and outfit for extracted honey in a productive region for beekeeping. Price, $1500. Land and homes are reasonably priced here. B. F. Averill, Howardsville, Va.

YOUR name on a card will bring by return mail, descriptive booklet with prices of my Improved Strain of Italian queens. Twenty-four years' experience. J. B. Hollopeter, Queenbreeder, Rockton, Pa.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, $1.00 each; $10.00 per dozen; $75 per 100. Pure mating, safe arrival and satisfaction guaranteed.

LET us save you money on three-band queens, package bees and nuclei. Special orders solicited. Send for circular and prices. No disease. Until June 1 write our Apalachicola, Fla., office. Tupelo Honey Co., Columbia, Ala.

BOOKING orders for spring delivery. Queens, package bees, and nuclei. The reliable A. I. Root strain. Golden and leather-colored Italians. Virgins, 60c; untested, $1.25. Circular free. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR SALE—To clear partnership 160 colonies Italians, good hives, metal-spaced, wired, full sheets metal tops; 4000 good combs, cheaper than pound packages. Will sell part of them in 10-fr. full-depth bodies, 2 and 3 each. Ed Bradley, Trenton, Ky.

ORDERS booked now for spring delivery, 3-frame nucleus and queen, $6.50; select tested, $7.50; Dr. Miller's strain. No pound packages. Low express rates and quick transit north. 10% with order. S. G. Crocker, Jr., Roland Park, Baltimore, Md.

COLORADO HEADQUARTERS for QUEENS—Northern-bred leather-colored three-band Italians. Safe arrival guaranteed. Booking orders now for June 1st delivery. Send for circular and price list. Loveland Honey & Mercantile Co., Loveland, Colo.

MERRILL'S Selected Italian Queens combine the qualities you want. They are large, vigorous, well marked, beautiful and gentle. Try them at $1.00 each; 6, $5.50; 12, $10.80. Ready after April 15. I ship nothing but the best. Order now. G. H. Merrill, Greenville, R. D. No. 5, S. C.

FOR SALE—20 colonies Italian bees in new standard 10-frame hives. Requeened last August with the famous Root queens. Price $10.00 per colony. Also 15 colonies, same as above, in 8-frame hives, halved together at the corners. Price $7.00 per colony. James Dearmin, Oakland, Minn.

BRIGHT ITALIAN QUEENS, $1.00 each, 10% less in dozen lots. Pure mating, safe arrival and reasonable satisfaction guaranteed in U. S. and Canada. Write us for prices on package bees. We have them in season. Graydon Bros., Rt. 4, Greenville, Ala.

FOR SALE—Three-band leather-colored bees and queens—big cut in prices. No disease. Safe arrival and satisfaction guaranteed. Shipping season April 15 to May 25. Send for circular and prices on quantities. J. M. Cutts & Son, R. D. No. 1, Montgomery, Ala.

MY GOLDEN ITALIAN QUEENS possess the qualities which make beekeeping profitable. Mated, $1.00 each, $10.00 per doz. Virgins, 50c each or $4.25 per doz. Safe arrival and satisfaction guaranteed. Your orders solicited. Crenshaw County Apiary (Melvin Talley, Prop.), Rutledge, Ala.

FOR SALE—Three-banded Italian bees and queens. 2-lb. package with queen, $4.75; without queen, $3.75. Queens, $1.00 each, $11.00 per dozen; 25 per cent cash books order; safe arrival and satisfaction guaranteed in U. S. and Canada. We ship nothing but the best. W. C. Smith & Co., Calhoun, Ala.

QUEENS, package bees and nuclei. Booking orders now for 1922. Shipping begins March 15. Our early queens ready for northern queenless colonies at unpacking time. One untested, $1.50; one select untested, $1.70. Circular free of our pedigreed strain on request. Dr. White Bee Company, Sandia, Texas.

FOR SALE—Package bees for spring delivery, three-banded strain, bred for business, 20% cash books your order. Safe arrival and satisfaction guaranteed. A two-pound package of bees, and select untested queen for $5.00; 25 or more for $4.75 each. Write for prices on larger lots. Caney Valley Apiaries, J. D. Yancey, Mgr., Bay City, Texas.

I EXPECT to be ready to start shipping 3-lb. packages of bees with 1-frame brood and bees, 1 untested queen, at $6.00; 2-frame with untested queen, $4.50, about April 15. Young tested queen, 50c extra, or $1.50 each. I think I was the second to ship packages of bees from this state and know how to serve customers. F. M. Morgan, Hamburg, La.

FOR SALE—61 colonies of bees, 10-fr. standard hives. No disease. With queen-excluders, broodnest, wired and foundation, 124 supers, mostly full-drawn combs, lots of stores, 1 2-fr. Root Cowan extractor, 1 Hershiser wax press, 1 steam-heated uncapping knife, 1 queen-rearing outfit and extras. Had 3½ tons of honey last season. Bees are in good condition. Going out of business. No reasonable price refused. O. J. Arfsten, Locke, Box 17, Calif.

BEES—2-lb. packages, $3.50; 6 or more, $3.45; 12 or more, $3.40; 25 or more, $3.25; young Italian queens, $1.25 extra. Shipments April 10 to May 1, by express f. o. b. New Orleans. Hardy three-banded and leather-colored stock, free from disease, shipped in Root cages on frame of foundation, safe arrival and satisfaction guaranteed or money refunded. 25% deposit to book your order. Order early and state date you prefer shipment. Reference, A. I. Root Co., New Orleans, La. R. S. Knight, 4927 Conti St., New Orleans, La.

FOR SALE—Package bees and Italian queens. We have been shipping packages and queens for years. Try us! Allenville Apiaries, Allenville, Ala.

EXPRESS is lower on northern bees. Prices no higher. 2 lbs. Italian bees with queen on comb of stores in May, $5.75. Comb of stores insures success. Prompt delivery and safe arrival guaranteed. Card brings circular of golden and 3-banded queens. Ross B. Scott, LaGrange, Ind.

THREE-BANDED ITALIAN QUEENS—Bred from queens whose bees have given big crops of honey. Pure mating and satisfaction guaranteed. May 15 to June 15: 1, $1.50; 6, $7.50; 12, $13.50. All orders filled in rotation. First on list will be first filled. J. D. Kroha, 87 North St., Danbury, Conn.

FOR IMMEDIATE acceptance: 100 good all around colonies 3-banded Italian bees and frame. Lock-joint hives, full sheets wired in foundation, contains following: 8 standard L frames, about 3 lbs. bees, one good young queen, $6.00 each. With extra super and frames, $9.00 each. Oscar Mayeux, Hamburg, La.

LARGE, HARDY, PROLIFIC QUEENS. Three-band Italians and Goldens. Pure mating and safe arrival guaranteed. We ship only queens that are topnotchers in size, prolificness and color. After June 1: untested queens, $1.50 each; 6 for $8.00; 12 or more, $1.40 each; 25 or more, $1.25 each. Tested queens, $3.00 each; 6 for $16.00. Buckeye Bee Co., Zoarville, Ohio.

WE know our queens are much better than all the rest. By actual test side by side, all workers look just alike. Three bands only. If they show the slightest trace of four bands, fire them back to us, for that shows very poor breeding indeed. Pure bred Italian bees only show three bands. Untested, $1.00; select untested, $1.25; tested, $2.00; select tested, $3.00. F. M. Russell, Roxbury, Ohio.

CONNECTICUT queens. Highest grade 3-banded Italians ready June 1. Select untested, $1.25 each; 6, $6.50; 12, $12.00; 50, $47.50; 100, $90. Two lbs. bees with queen, $5.00; 3 lbs. with queen, $7.00. Two-frame nuclei with queen, $5.50; 3-frame with queen, $7.50. Select virgin queens (not culls), 50c each, $45.00 per 100. No disease and satisfaction guaranteed. A. E. Crandall, Berlin, Conn.

FOR MAY DELIVERY—One vigorous Italian queen, one frame emerging brood, one pound bees, price complete, $5.00. Additional pound bees, $1.00. Additional frame of brood, $1.00. Banat mixed queens and bees 5% discount. After May 25 10% discount on all. Safe arrival guaranteed. Send 10% to book order. T. W. Livingston, Norman Park, Ga.

PURE ITALIAN QUEENS—Golden or leather-colored, packages and nuclei; 1 untested queen, $1.50; 6, $7.50; 12, $13.50; 50, $55.00; 100, $100; virgins, 50c each; packages, 24 and under, $2.25 per pound; 25 and over, $2 per pound; nuclei, one-frame, $4; 2-frame, $6; 3-frame, $7.50; queens extra. W. A. Matheny, Ohio University, Athens, Ohio.

THAT PRITCHARD QUEENS AND PRITCHARD SERVICE made a hit last season is proven by the many letters of appreciation and repeated orders received. This year we are BETTER PREPARED with a LARGER OUTFIT AND REDUCED PRICE. Untested, $1.25 each, 6 for $7.00; select untested, $1.50 each, 6 for $8.50; select tested, $3.00 each. Queens clipped free on request. We are booking orders now. Send yours at once and we will do our best to ship on date you desire. Acknowledgment and directions for introducing sent on receipt of order. Safe arrival and satisfaction guaranteed. Untested ready about June 1. Arlie Pritchard, R. D. No. 3, Medina, Ohio.

BURLESON ITALIAN BEES AND QUEENS—In 2 and 3 lb. packages; 1 2-lb. package with select untested queen, $5.00; 25 or more, $4.50; 1 3-lb. package with select untested Italian queen, $6.25; 25 or more, $5.75. Ten per cent with order, balance 10 days before shipment; 1000 colonies to draw from. Can deliver the goods on time. Safe arrival and satisfaction guaranteed. T. W. Burleson, Waxahachie, Texas.

FOR SALE—100% queens bred from extra-select Jay Smith breeder. Larger queens from my cell builders reinforced with hatching brood and mated in standard frame nuclei. I guarantee safe arrival and entire satisfaction and that every queen lays before being caged. Also package bees. I am after a name and reputation. Give me a trial. Select untested, 1, $1.25 6, $7.00; 12, $13.00; 25 to 100, $1.00 each. H. Peterman, R. F. D., Lathrop, Calif.

FOR MAY DELIVERY, 1922—One vigorous Italian queen, one frame emerging brood, one pound bees. Price, complete, f. o. b. Bordelonville, $5.00. Additional frames of brood, each $1.00; additional pound of bees, each $1.00. Queen introduced and laying en route to you. Safe arrival and satisfaction guaranteed. No disease. Reference given. Orders booked one-fifth down. May delivery. Send for addresses of satisfied customers. Jes Dalton, Bordelonville, La.

FOR SPRING DELIVERY—Vigorous leather-colored Italian queens, famous three-banded stock, also bees in packages. Can ship April 15 or May 1. Two pound package with laying queen, $6; three-pound package with laying queen, $7.25. Three-frame nucleus with laying queen, same price as three pounds bees with laying queen. If you wish a purely-mated queen in a package, add $1. I offer thoroughbred stock, and stock bred for business. I am now booking orders for spring delivery. Safe arrival guaranteed, or replacement or money refunded. Order early. C. M. Elfer, St. Rose, La.

THREE pounds of bees, a Hoffman frame of brood and honey, and an untested Italian queen for $6.50. Discount allowed on large order. I guarantee satisfaction, safe arrival and free from any kind of disease. I will replace any packages that arrive in bad order, or shortage, if given a receipt from the express company to that effect. 25% books your order for April and May delivery. E. J. Beridon, Jr., Mansura, La.

I WILL give packages of bees for a good bird or quail dog, about a year old, and dog must be trained. I would prefer a bitch, and must have the dog on trial. Can furnish best of references. E. J. Beridon, Jr., Mansura, La.

LOW PRICES—High quality stock for 1922. 2-frame nuclei and untested Italian queen, $5.00 each; 25 or more, $4.75 each. 3-frame nuclei and untested Italian queen, $6.50 each; 25 or more, $6.25 each. If tested queens are wanted, add 50c per nucleus. All prices f. o. b., Macon, Miss. No disease has ever been in our yards. Will replace any loss or refund money, on purchaser sending us bad order receipt from express agent. Terms: 10% of amount with order, balance just before shipment is made. Order early and get your bees when you want them. Hummer Bees, Queens and Service will give satisfaction. No queens except with nuclei. Geo. A. Hummer & Sons, Prairie Point, Miss.

ITALIAN BEES AND QUEENS.—I am wintering tested queens, reared late last fall, for early shipments with packages. Pound packages shipped with comb. Shipped when you want, with tested queens, 2-lb. pkg., $5.75; 12 or more, $5.50 each; 3-lb. pkg., $7.25; 12 or more, $7.00 each. Nuclei, per frame, same prices respectively as pound packages. For May delivery with untested queens, deduct 50c per package. Queens, May and June, untested, $1.50; 12, $1.25 each; select untested, $2.00; tested, $2.25; 6 $2.00 each; select tested, $2.75. 10% discount on orders for queens received prior to April 1. Certificate of inspection with shipment. Satisfaction and safe arrival guaranteed. 25% books your order. J. L. St. Romain, Hamburg, La.

MISCELLANEOUS.

CALIFORNIA Wonder Seed Corn. Greatest producer. Also shelled Spanish peanuts at wholesale. Write for circular. James McKee, Riverside, Calif.

MEDICINAL roots and herbs are very profitable to grow. We especially recommend growing Golden Seal, which with good care will yield as high as $10,000 per acre for each crop. It takes several years to mature but will average $1000 a year. Special Crops, a monthly paper, tells how. Sample copy, 10c, $1.00 per year. Address Special Crops Pub. Co., Box "G," Skaneateles, N. Y.

HELP WANTED.

WANTED—Young man with general experience for the coming bee season. State qualifications in first letter. Room and board furnished. B. B. Coggshall, Groton, R. D. No. 12, N. Y.

WANTED—Married man to work in commercial orchard, who is able to extract honey and help with bees. H. W. Funk, Normal, Ill.

EXPERIENCE AND FAIR WAGES given to active young man willing to work for help in well-equipped beekeeping business of 600 colonies. Season April to November. State occupation, weight, height, age and experience. The Pettit Apiaries, Georgetown, Ont., Can.

WANTED—Young, energetic, willing worker acquainted with extracted honey production and light farming, for 1922 season in our out-apiary business. Give age, weight, wages expected, and also reference as to character, experience with bees, farm work, trucks, and cars all in first letter. Must be handy with shop tools. Steady job for right party. The Hofmann Apiaries, Janesville, Minn.

SITUATION WANTED.

MIDDLE-AGED single man with three years' experience wants position at once. Good mechanic. Chas. L. A. Beckers, 604 West 49th St., New York City.

STUDENT of bee culture wishes place with large honey producer to learn practical beekeeping. Good worker. Can also keep books and do stenographer's work as am qualified. Good references. Fred L. Allen, Nacogdoches, Box 574, Texas.

BURBANK SEEDS—BULLETIN 61 FREE, describing new and rare flowers, grains and vegetables. Also announcing the new books (just published), "How Plants Are Trained to Work for Man." Luther Burbank, Santa Rosa, Calif, U. S. A.

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Wherever the larger brood-chamber may be advantageous, the Jumbo Hive meets the requirements of the beekeeper and the bees for size fully as well as any large hive, with the very decided advantage of not necessitating any additional or odd-sized equipment. It gives 27% more brooding and storage space than the standard 10-frame hive. The Jumbo brood-chamber with 10 good combs has room for over 90,000 cells, which number is computed to be 20,000 more than the best laying records show that any queen has been able to fill at any one time. This is sufficient room for the most prolific queen and 15 to 20 pounds of stores, even at the height of brood-rearing.

BECAUSE---

—if you plan using a larger hive next year, the Jumbo equipment is what you want. It will prove cheapest and best.
—especially, all standard 10-frame equipments fits the Jumbo. So, you can get this larger hive for your apiary at least possible expense.
—once a part of your equipment, it can be worked with least possible inconvenience.

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CANDY FOR WINTER FEED

In winter bees sometimes starve with plenty of honey in the hive. Use candy and avoid this unnecessary loss. Put up in large paper plates weighing two pounds each. Write for price, also catalog of Bee Supplies.

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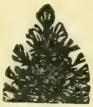

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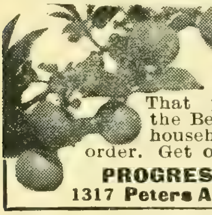

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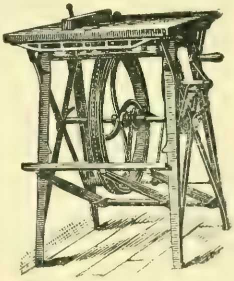

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For vegetable growers and all lovers of flowers. Lists the old stand-bys; tells of many new varieties. Valuable instructions on planting and care. Get the benefit of the experience of the oldest catalog seed house and largest growers of Asters in America. For 73 years the leading authority on vegetable, flower and farm seeds, plants, bulbs, and fruits. 12 greenhouses. 500 acres.

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1922 ITALIAN QUEENS

Untested, $1.20 each, 12 or more, $1.00 each.
Select Untested, $1.50. Tested, $2.00.
No disease.

Package Bees Priced on Request.

D. W. HOWELL
Shellman, Ga., Box A3.

INDIANOLA APIARY

is now booking orders for 1922 for Italian bees and queens. Write for price list and circular. No disease. Bees inspected by State inspector.

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A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. **Agents wanted. Big Profits. Write for Catalog.** THE BEST LIGHT CO.
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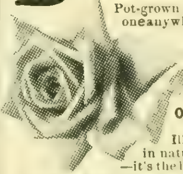

Pot-grown rose bushes, on own roots, for every one anywhere. Plant any time. Old favorites and new and rare sorts, the cream of the world's productions. "Dingee Roses" known as *the best* for 71 years. Safe delivery guaranteed anywhere in U. S. Write for a copy of

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Illustrates wonderful "Dingee Roses" in natural colors. It's more than a catalog—it's the life time experience of the *Oldest and Leading Rose Growers in America.* A practical work on rose and flower culture for the amateur. Offers 500 varieties Roses and other plants, bulbs and seeds and tells how to grow them. Edition Limited. *Established 1850. 70 Greenhouses.*

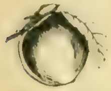
THE DINGEE & CONARD CO., Box 218, West Grove, Pa.

Trees---Plants---Seeds

Everything for the fruit grower, farmer or suburban home. Highest grade stock, low, direct-from-grower prices. You can be sure when you buy from us that stock is healthy, sturdy and ready to produce maximum results in fruit or flower.

Our extensive line of ornamental shrubs, bushes, and perennials includes the worth-while varieties for beautifying the home grounds, a splendid stock for commercial growers or home use. Seeds for the vegetable or flower garden.

Our 1922 catalog, a mine of planting information, is free.



We have the exclusive sale of the Dr. Worcester Peach.

WOODLAWN NURSERIES
882 Garson Ave.,
Rochester, N. Y.

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ISBELL'S MICHIGAN-GROWN

Whatever your soil, there's a Bell Brand strain that is fitted to your farm—that will give you a big yield yet is so hardy that it will not winterkill. Do not risk a crop failure—plant the proven, tested Bell Brand.

FREE Samples of any field seeds to show quality, sent on request with Isbell's 1922 Seed Annual. Big savings on sterling quality seeds, direct from grower. Write today.

S. M. Isbell & Company
677 Mechanic St. (33) **Jackson, Mich.**

ROSES of New Castle

Are the hardiest, sturdiest, freest blooming rose plants in America. Grown on their own roots in the fertile soil of New Castle. We give you the benefit of a lifetime experience and the most select list in America. Every desirable Rose now cultivated in America is included in our immense stock—and the prices are right.

Our rose book for 1922 ROSES OF NEW CASTLE tells you how to make rose growing a success. Published and elaborately printed in actual colors. Send for your copy today—a postal will do. Address **HELLER BROS. CO., Box 218, NEW CASTLE, IND.**

HUGHES **HUBAM** **ALABAMA**

Grown where it originated, under direct supervision of H. D. Hughes, the original discoverer and distributor. Genuine. Uniform types. Early or late. Use discretion.

FREE - A SAMPLE OF SEED OF THIS WONDERFUL CLOVER

Yields 6 times as much as other clovers
Great for stock, either pasture or hay • Palatable • Very Nutritious • Drouth resistant
Best honey plant known
Makes your soil produce more

WRITE NOW

HUBAM

BIG MONEY growing seed of most wonderful clover ever discovered • Thoroly tested
Can be grown anywhere • •
Recommended by farmers editors etc. Ask for booklet "HUBAM CLOVER • WHAT • WHERE • WHY"

ALABAMA HUBAM CLOVER ASSN
P BOX 61 - NEWBERN • ALA

GOOD SEEDS

Grown From Select Stock —None Better—52 years selling good seeds to satisfied customers. Prices below all others. Extra lot free in all orders I fill. **Big free catalogue** has over 700 pictures of vegetables and flowers. Send your and neighbors' addresses.

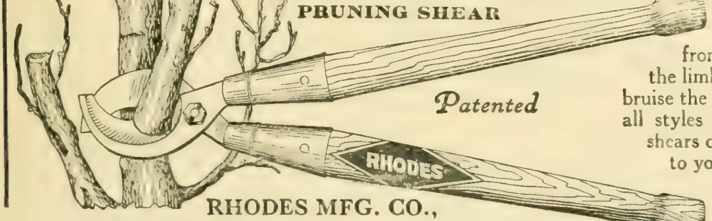
R. H. SHUMWAY, Rockford, Ill.

HUBAM CLOVER **The Honeybees' Friend**

Beekeepers are greatly interested in Hubam Clover because it produces the largest crop of splendid honey food. We have a select lot of certified hardy Hubam Clover seed. 25c an oz.; $2.50 a lb.; when orders are placed for ten lbs. or more, $2.00 per lb. Order early. Supply limited.

KEITH BROS. NURSERY, Box 716, Sawyer, Mich.

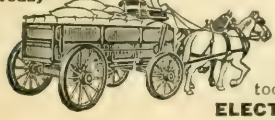
RHODES DOUBLE CUT PRUNING SHEAR



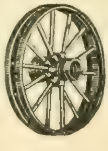
THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door. Write for circular and prices.

RHODES MFG. CO.,
328 S. DIVISION AVE., GRAND RAPIDS, MICH.

Write for Book Today



FARM WAGONS



High or low wheels—steel or wood—wide or narrow tires. Steel or wood wheels to fit any running gear. Wagon parts of all kinds. Write today for free catalog illustrated in colors.

ELECTRIC WHEEL CO., 23 Elm Street, Quincy, Ill.

PLANT HUBAM

The New ANNUAL Sweet Clover

Hubam is a fast growing white sweet clover—grows 5 to 8 feet the same season. An excellent hay, big yielding and nutritious.

In crop rotation, Hubam saves a year, as it is an annual; it means thousands of extra dollars in the pockets of growers. Hubam has been acclaimed the most important crop development in years.

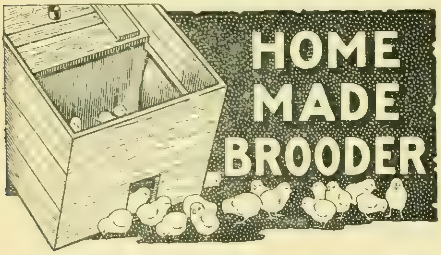
Plant Northern-Grown Hubam

Isbell has adopted this southern clover to northern conditions—has made it hardy, yet big-yielding. Make sure of big crops by procuring Michigan grown Bell Brand Hubam direct from the growers.

Write Today For Special Prices
CATALOG FREE

Isbell's 1922 Catalog gives cultural directions—describes the best seeds—points the way to bigger, better crops. Send for it today—it is **free**—and it will prove very valuable to you.

S. M. ISBELL & COMPANY
676 Mechanic St. (24) **Jackson, Mich.**

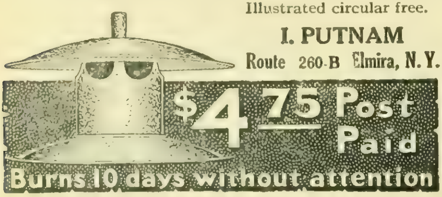


Costs Only $4.96, Complete

In an hour you can make a better brooder than you can buy. No tools needed but saw and hammer. It will do the work of 4 old hens and do it better. The materials, including heater, cost $4.96.

I want you to try my Brooder and will send you plans for making it, together with a Putnam Brooder Heater, for $4.75; all postpaid. Try the Brooder out and if you don't say it's the best Brooder you ever used, return the Heater in 30 days and get your money back. Your dealer will make you the same offer and guarantee. Ask him, but if he does not carry the Brooder Heater, send me $4.75 and I will mail you a Brooder Heater and plans promptly. Illustrated circular free.

I. PUTNAM
Route 260-B Elmira, N. Y.



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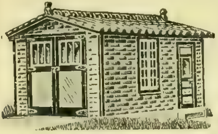
"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofings, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Positively greatest offer ever made.

Edwards "Reo" Metal Shingles

cost less; outlast three ordinary roofs. No painting or repairs. Guaranteed rot, fire, rust, lightning proof.



Free Roofing Book

Get our wonderfully low prices and free samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No. 183

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Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles.
THE EDWARDS MFG. CO.,
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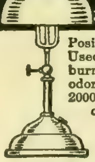
PATENTS Practice in Patent Office and Court. Patent Counsel of The A. I. Root Co.
Chas. J. Williamson, McLachlan Building,
WASHINGTON, D. C.

850,000 GRAPE-VINES

66 varieties Also Small Fruits, Trees, etc. Best rooted stock. Genuine. Cheap. 2 sample vines mailed for 20c. Descriptive price list free. LEWIS ROESCH, Box C, Fredonia, N. Y.

The "BEST" LIGHT



Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles. 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog. AGENTS WANTED EVERYWHERE.
THE BEST LIGHT CO.
306 **E. 5th St., Canton, O.**

SPECIAL NOTICE.

When the advertisement of aluminum honeycombs first appeared in Gleanings, March, 1921, the following reservation was printed in the advertisement:

> "The Editors of Gleanings in Bee Culture, altho not endorsing aluminum combs, will thoroly test these combs made in Texas, and will announce their conclusions as to the merits of them, in their climate and latitude, upon the completion of their tests in several apiaries."

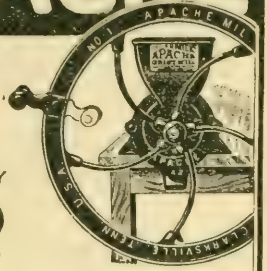
The Texas Honey Producers' Association sent us last spring a set of aluminum honeycombs made in Texas sufficient for one extracting super. These were used by us in the extracting super according to directions, and the bees filled them with honey, altho they showed a preference for the wax combs. We feel that in fairness to the aluminum combs and also to the beekeepers that we should reserve full judgment until we can make further tests, and especially reserve judgment as to their use in the brood-chamber.

Managing Editor, Gleanings in Bee Culture.

This Ball Bearing

APACHE

Grist Mill



PREPAID FOR ONLY

$8.00

FEED the hopper, turn the wheel, and enjoy making your own wholesome whole wheat or graham flour, old-fashioned corn meal, rye flour, chops and hominy, and *bring down living cost.* Best coffee and spice grinder. If you have poultry, grind your chicken feed, save feed money and get more eggs.

Apache grinding plates of special mixture iron made to give longest wear. Steel ball bearings make it only a boy's job to run it. Send money or check today. Satisfaction guaranteed. For the present we can make prompt delivery. So don't delay.

A. H. PATCH, Inc., Clarksville, Tenn.

The Apache Grist Mill is companion to the Black Hawk Corn Sheller, famous for 35 years for its "Can't Wear Out" Guarantee.

BETTER GARDENS
EASY TO KILL WEEDS
AND MULCH THE SOIL

BARKER
WEEDER, MULCHER
AND CULTIVATOR

Don't do garden work the slow, back breaking way. The BARKER makes the finest gardens possible—quickly, easily. Simply push along rows (like lawn mower)—8 blades revolving against underground knife destroy the weeds and in same operation break the crust into a level, porous, moisture-retaining mulch. Aerate soil. "Best Weed Killer ever used." Has leaf guards, also shovels for deeper cultivation. A boy can run it—do more and better work than 10 men with hoes.

Write for FREE BOOK

Illustrated book, postpaid, gives prices delivered to your station, contains valuable information on gardens, letters from users, etc. A card brings it. Write today.

BARKER MFG. CO.
Box 23
DAVID CITY, NEB.

Pennsylvania Beekeepers!

I wish to announce that I have secured the State Agency for The G. B. Lewis Company, and am now in position to furnish you with "Beeware" at Catalog Prices, direct from Bloomsburg. My first carload has arrived, consisting of:

- MODIFIED DADANT HIVES AND SUPERS—The Big Hive which is proving so successful everywhere.
- DADANT'S INCOMPARABLE COMB FOUNDATION—The kind the bees prefer.
- LEWIS UNEQUALED SECTIONS—Best by test.
- STANDARD EQUIPMENT of every description, and
- EVERYTHING listed in the "BEEWARE" CATALOG.

Let me figure on your needs before you purchase elsewhere. A card will bring my catalog. Shipping facilities of the best. Four railroads, P. R. R., D. L. & W., P. & R. and B. & S. Prompt and courteous service always. A trial order will convince. Reference: First National Bank, Bloomsburg, Pa.

C. C. BRINTON, "The Busy Bee Man"
BLOOMSBURG, PENNSYLVANIA

MASON BEE SUPPLY COMPANY
MECHANIC FALLS, MAINE

From 1897 to 1922 the Northeastern Branch of The A. I. Root Company

PROMPT AND EFFICIENT SERVICE

BECAUSE—Only Root's Goods are sold.
It is a business with us—not a side line.
Eight mails daily—Two lines of railway.
If you have not received 1922 catalog send name at once.

Established 1885.
Write us for catalog.

BEEKEEPERS' SUPPLIES

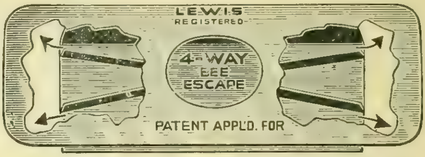
ALWAYS ON TOP

The Kind You Want and the Kind That Bees Need

We have a good assortment in stock of bee supplies that are mostly needed in every apiary. The A. I. Root Co.'s brand. Let us hear from you; information given to all inquiries. Beeswax wanted for supplies or cash.

John Nebel & Son Supply Co.
High Hill, Montgomery Co., Mo.

LEWIS 4-WAY BEE ESCAPES



Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal. Price each 18c postpaid. Made by

G. B. Lewis Company, Watertown, Wis., U.S.A.

For Sale by all Dealers.

"The Capital of Beedom"

Half-a-hundred trains—freight, express, and mail—besides boats and motor-trucks, at the beeman's service every day.

Full stocks, best goods, service and treatment. Get catalog.

MOORE & PEIRCE,
ZANESVILLE, OHIO, 22½ S. Third St.

CENTRALLY
LOCATED
TO
SERVE
NEW
ENGLAND
BEEKEEPERS.

Root QUALITY

BEE SUPPLIES

ORDERS
FILLED
PROMPTLY.

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CATALOG
ON
REQUEST.

F. COOMBS & SONS, BRATTLEBORO, VERMONT

"falcon"

SUPPLIES --- QUEENS --- FOUNDATION

When you buy **"falcon"** you get the best.

Prices for 1922 will please you.

Ask for our free Catalog and booklet, "Simplified Beekeeping."

W. T. FALCONER MFG. COMPANY

FALCONER (Near Jamestown) NEW YORK

"Where the best beehives come from."

If there is no "**falcon**" Dealer near you, write for our proposition to dealers.

BUYING BEES IS LIKE---

Mr. Beekeeper: Buying bees is like buying other stock. The first consideration in the purchase of bees or queens is to get hardy, vigorous stock. Our bees and queens are noted to be very hardy, vigorous and very resistant to diseases. The second consideration is getting them in time for the honey flow. Send us your order. You will not have to worry about bees not arriving on time, loss in transit, disease, etc., as safe delivery and satisfaction are guaranteed. Do you realize that a nice frame of emerging brood is equal to 1 lb. of bees? Each package is shipped on a comb of emerging brood with honey. Also nuclei, full colonies, pre-war prices. 10% with your orders. First-class references if desired. Write for price list and other information.

M. VOINCHE, BUNKIE, LA.

Responsibility

We like to have our customers think of our stock, our shipping facilities and our treatment of their orders as RELIABLE. Not the best perhaps, but equal to any. A card will bring our circular. May we hear from you?

R. V. STEARNS

BRADY, TEXAS.

BEES AND QUEENS for 1922

5 PER CENT DISCOUNT FOR ORDERS RECEIVED IN JANUARY.

One 1-frame nucleus with untested queen, $4.00; one 2-frame nucleus with untested queen, $5.00; untested queens, $1.25 each; 12, $1.10 each; tested queens, $1.60 each; 12 or more, $1.35 each; select tested queens, $2.00 each. Breeders, $5.00 at all times. Satisfaction and safe arrival guaranteed.

H. L. MURRY - SOSO, MISSISSIPI

QUEENS

OUR OLD RELIABLE THREE-BANDED ITALIANS ARE HONEY GETTERS.

They are gentle, prolific, and very resistant to foul brood. Orders booked for one-fourth cash. Safe arrival guaranteed. Circular free.

PRICES APRIL 1st TO JULY 1st.

Untested	$1.25;	over 25, $1.00 each
Sel. Unt.	1.50;	over 25, 1.25 each
Tested	2.50;	over 25, 2.25 each
Selected Tested		3.00 each

See our Dec. and Jan. Advertisement.

JOHN G. MILLER

723 C Street, Corpus Christi, Texas.

QUEENS

Three-banded Italian Queens that must please. Pure mating and satisfaction guarteed. We do not claim to have the best, but do claim them to be as good. Untested Queens, $1.25 each. Twelve or more, $1.10 each. Tested Queens, $1.60 each. Twelve or more, $1.40 each.

CYPRESS BEE SUPPLIES

Hives, hive-bodies, bottom-boards, covers, frames, foundation, etc. Write for prices. All queens shipped from Crawford, Miss., all supplies shipped from Coker, Ala.

The Abston Apiaries

Crawford, Miss. **Coker, Ala.**

QUEENS NUCLEI AND PACKAGE BEES

Jensen's "Blue Ribbon" Bees and Queens win favor wherever they go. "Highest Quality" and "Best Service" are synonymous with us in handling your orders, large or small. Eight years' experience in the South, rearing queens and preparing bees for shipment, coupled with best shipping facilities, are items in your favor that will count. Our bees are good hustlers, hardy winterers, gentle, and uniformly marked Three Bands. Queens that are beauties; possessing great prolificacy and longevity, the qualities that determine a queen's worth. They clean up European foul brood. We guarantee: Freedom from disease, health certificate with each shipment. Safe arrival East of Rocky Mts. in U. S. and Canada. (Agent's statement must accompany claims to avoid delays.) Complete satisfaction.

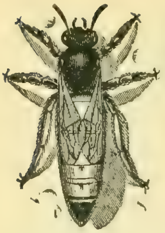
QUEENS—Untested queens, $1.10 each; over 25, $1.00 each. Purely mated. Select Untested, $1.35 each; over 25, $1.25 each. Tested, $2.00 each. Select Tested, $3.00 each. Breeders, $7.50 and $10.00 each, in a one-frame nucleus.

NUCLEI—Two-frame with young queens, $5.50 each, over 10, $5.00 each. Three-frame with young queens, $7.25 each. Over 10, $6.75 each.

COMBLESS PACKAGES—One-pound, $2.75 each; over 10, $2.50 each. Two-pound, $4.25 each; over 10, $4.00 each. Three-pound, $6.00 each; over 10, $5.75 each. If queen is wanted make choice and add price.

TERMS—20% to book, balance before shipment. We do not accept more orders than we can fill when agreed. Shipment of bees by express f. o. b. here unless quoted otherwise. Ask for our folder, it's free.

JENSEN'S APIARIES, R. F. D. NO. 3, CRAWFORD, MISSISSIPPI.



BEES AND QUEENS

Mr. Beekeeper, if you want good quality, quick service, prompt attention, and perfect satisfaction, *TRY NORMAN BROS.'* pure three-banded Italian bees and queens. And see for yourself. We are going out to please our customers and to build up our business, and we know it will take honest dealing to do it. And we are going to send out just what we are advertising. Our bees are hardy, prolific, disease-resisting and honey gatherers. Orders booked with one-fourth down; balance before shipment is desired. Place your order with us. We ship when you want them. We ship only 2-lb. packages by express f. o. b. shipping point. $4.00 each; 12 or more, $3.80 each. Add prices of queens wanted.

Prices April and May.

	1	6	12	100
Untested Queens..	$1.25	$6.50	$12.50	$90.00
Select Untested..	1.35	7.00	13.20	100.00
Tested Queens...	2.00	11.00	21.00	
Select Tested.....	2.50 each			

We guarantee pure mating, safe arrival, free from all diseases, and perfect satisfaction in U. S. A. and Canada. Remember you take no risk when you deal with us. Isn't that enough said?

NORMAN BROS.' APIARIES

NAFTEL, ALA.

1922 ROOT 1922

QUALITY QUEENS

3000 Nuclei headed with young Italian Queens ready to serve you on early spring orders

April, May and June.

Untested Queens	$1.50;	25 to 99, $1.30
Select Untested Queens	1.75;	25 to 99, 1.50
Tested Queens	2.25;	25 to 99, 2.00
Select Tested Queens.	2.75;	25 to 99, 2.25

July to November.

Untested Queens......	$1.25;	25 to 99, $1.00
Select Untested Queens	1.50;	25 to 99, 1.25
Tested Queens	2.00;	25 to 99, 1.50
Select Tested Queens..	2.25;	25 to 99, 2.00

Write for prices on 100 or over.

1 1-frame Nucleus with Tested Breeding Queen	$10.00
1-lb. Package Italian Bees..........	$2.25
2-lb. Package Italian Bees..........	3.75
3-lb. Package Italian Bees..........	5.25

Quantity prices on application.

Safe arrival and satisfaction guaranteed to any point in the United States.

The A. I. ROOT CO. OF TEXAS

Box 765, San Antonio, Texas.

For Your 1922 Requirements

Everything in Bee Supplies, Quality and Service combined with Lower Prices. Our production cost is lower; beekeepers, this is all given to you.

———o———

Our catalog for 1922 is out, send for one.

August Lotz Company, Boyd, Wisconsin

BANKING BY MAIL AT 4%

HAPPY HOMES

Health is the first step in success. Thrift is the next—it goes hand in hand with a happy home.

Open your Thrift Account with this strong, progressive bank at 4%—you can bank with us by mail.

Write for Booklet.

THE SAVINGS DEPOSIT BANK CO.

A.T.SPITZER, Pres.
E.R.ROOT, Vice Pres. E.B.SPITZER, Cash.

MEDINA, OHIO

The Crowning Touch to the Home

It's just a house **until you plant a garden**. Then it becomes a **home**—a place where happiness can be found indoors or out—a living index to the character of those who live within. No wonder real home-makers give such care to planning beautiful gardens!

The choice of varieties is made easy for you by the S. & H. catalog. S. & H. ornamental shrubs are carefully selected, vigorous plants, with abundant foliage and finely colored bloom. All seeds listed are taken from unusually fine strains, proven by our own trials. S. & H. trees are preferred by professional nurserymen and orchardists all over the country. Nearly every thing you need for your garden is listed.

Be sure to send tonight for this interesting, splendidly illustrated catalog.

THE STORRS & HARRISON CO.
Nurserymen and Seedsmen
Box 147
PAINESVILLE, OHIO

HUBAM

THE NEW GIANT HONEY CLOVER

A mass of white bloom until late autumn, heavy with A-1 honey. A summer-long paradise for bees.

Hubam produces an almost incredible yield of honey, and, being annual, saves a year in crop rotation. Sown with grain, it matures after harvest for forage, soiling or seed. Six times as much nitrogenous material for plowing down as Red Clover.

1 to 4 lbs. per acre in 30-in. drills gives big seed yield. Tremendous demand—and the honey is ''velvet.''

Our Hubam is scarified and certified to be from original Ames stock. Write for further information and prices.

May Seed &
Nursery Co.
120 Elm Street
Shenandoah, Iowa

A CINCH FOR BEEKEEPERS

That's what HUBAM means.

It makes a wonderful honey flow from early summer to killing frost; is a splendid legume for pasture or hay; and a luxuriant growth to plow under for humus and plant food. Besides this, the cash crop from the seed alone is no small item. Our average yield has been 400 lbs. per acre. Let us send you our Seed Sense magazine free. Tells all about it. We offer genuine, certified *HUBAM* at $2.00 a pound on early orders

With each and every order for Hubam we will include *FREE* a can of Nitragin pure culture bacteria which will insure proper growth of the Hubam plant.

HENRY FIELD SEED COMPANY
SHENANDOAH, IOWA.

QUEENS

THREE-BANDED ITALIAN BRED FOR SATISFACTION.

As good as money can buy. Breeding queens are imported from Italy. By using imported mothers and mating their daughters to domestic drones, you have a light leather-colored bee, which is recognized by the largest beekeepers of the world as the best for general purposes. All queens are reared in strong two-story ten-frame hives, under the natural condition. You take no risk in buying from me, as I guarantee perfect satisfaction or return your money. Give me a trial, I can please you.

	1	6	12
Untested ...	$1.50	$7.50	$13.50
Sel. Unt.	1.75	9.00	16.50
Tested	2.50	13.00	24.00
Sel. Tested..	4.00	22.00	41.50

Write for prices on larger lots.

D. E. COLLIER
RAMER, ALABAMA.

I Pay Transportation Charges on Package Bees

THREE BANDED

1-lb. package, including young three-banded queen	$4.50
2-lb. package, including young three-banded queen	6.00
3-lb. package, including young three-banded queen	7.50

25 cents per package less for twelve or more packages. Delivered to your address via parcel post. In comparing my prices with others, take in consideration you have no express charges to pay. Parcel post shipments go through quicker.

SELECT (one grade) untested queens, $1.50; six, $8.00; twelve, $15.00. Safe arrival of bees and queens, pure mating, and satisfaction guaranteed. Let me book your order now with ten per cent cash, balance just before shipping. Shipment will be made on the day you name. I have not yet disappointed a customer. No disease.

JASPER KNIGHT
HAYNEVILLE - - - ALABAMA

Queens SWARMS OF BEES BY THE POUND FOR 1922---THREE-BANDED STRAIN ONLY *Queens*

Price of Packages by Express—1-lb. packages, $4.00 each; 6 up to 12. $3.90 each; 12 or more, $3.75 each. 2-lb. packages, $5.50 each; 6 up to 12, $5.25 each; 12 or more $5.00 each. 3-lb. packages, $7.25 each; 6 up to 12, $7.00 each; 12 or more, $6.75 each. If wanted by parcel post, add 10 per cent. Select untested queens, $1.50 each; 12 or more, $1.40 each. Select tested queens, $3.00 each; 12 or more, $2.75 each. Pure mating of all queens is guaranteed. Wings clipped on request. We breed only the 3-banded strain, as we find after test they are unsurpassed by any other strain. All queens are reared by experienced and expert queen-breeders and the business management is under control of those having over thirty years' experience keeping bees in a large way. Every package or queen ordered is guaranteed to arrive in good condition and to give entire satisfaction. 10 per cent cash with order. Bees or queens shipped day specified.

HAYNEVILLE APIARY COMPANY, HAYNEVILLE, ALA., U. S. A.

TALKING LAWS' QUEENS SPEAK FOR THEMSELVES QUEENS

Over thirty-five years as commercial queen-breeder and advertiser in this journal have brought orders from thousands of Gleanings readers. If there is a dissatisfied customer I do not know it. I have many testimonials that make me glad. One firm bought over 5000 queens of me, and writes that my ''queens and business methods are very satisfactory.'' Another writes, ''Your queens are all good queens. Our individual crop of honey was 105,000 pounds season 1921; Laws' queens did it.''

PRICES: Untested, each, $1.25; 12 for $12. Tested, each, $1.50; 12 for $15. Breeding queens, none better if as good, each, by mail, $5; or with a 3-frame nucleus of her own bees by express, $10. This nucleus, if ordered early, should gather honey enough to pay all costs. Write for prices quantity lots. I am prepared to furnish in large lots; also bees in three-frame nuclei. No disease; entire satisfaction. Address

W. H. LAWS, BEEVILLE, BEE COUNTY, TEXAS

ELTON WARNER'S QUEENS (Italian)

—a strain developed during years of selective breeding for use in his many commercial honey producing apiaries.

Every queen is reared and selected with the greatest care, and only one grade is sold. No queen leaves our apiaries that does not reach our high standard of perfection.

To secure shipment when wanted, please place your order early. No cash required with order. (Payment to be made before shipment.)

1 to 3	4 to 11	12 or more
$2.00 each.	$1.80 each.	$1.60 each.

ELTON WARNER APIARIES.
R. D. No. 1, Asheville, North Carolina.

Send for illustrated catalog.

BURLESON'S OLD RELIABLE
Three-Banded Italian Queens

NONE BETTER Not as cheap as some, but worth the difference. I guarantee them to be absolutely free from brood diseases.

These are My 1922 Prices—Untested, $1.25 each; $13.50 per doz; 25 or more, $1 each. Select Untested, $1.50 each; $15 per doz., 25 or more, $1.15 each. Select tested, $3 each.

Considering the high quality of my queens combined with service and reliability justifies the above prices. **Send all orders together with remittance to**

J. W. SEAY, Mgr., MATHIS, TEXAS
T. W. BURLESON, WAXAHACHIE, TEXAS.

Try Achord's Package Bees and Queens

THREE-BANDED ITALIANS ONLY.

We have the stock, equipment, and experience, and can give you prompt, satisfactory service. We have more than 1000 big, healthy hustling colonies of pure Italian bees to draw from. Write for illustrated price list.

W. D. ACHORD, FITZPATRICK, ALABAMA

QUEENS
Three-Band Italians

PACKAGE BEES

QUEENS
Silver Gray Carniolans

Orders booked with 25 per cent deposit, balance just before shipping. Deliveries start April 1st. Safe arrival guaranteed of bees within 5 days of shipping point, queens anywhere in U. S. A. or Canada. Circular free.

1 pound package	$2.00 each.	10 or more	$1.75 each
2-pound package	3.50 each.	10 or more	3.00 each
3 pound package	5.00 each.	10 or more	4.50 each
1 Untested queen	1.25 each.	10 or more	1.20 each
1 Select Untested queen	1.50 each.	10 or more	1.40 each
1 Tested queen	2.00 each.	10 or more	1.80 each
1 Select Tested	2.25 each.	10 or more	2.00 each

Write for prices in large lots.

Breeders, extra selected and tested for breeding . . . . . . $5.00 each

References by permission—First National Bank of San Jose; Security State Bank, San Jose; Gleanings in Bee Culture, Medina, Ohio; American Bee Journal, Hamilton, Ill.; Western Honey Bee, Los Angeles.

J. E. WING, 155 SCHIELE AVENUE, SAN JOSE, CALIFORNIA

Bees and Queens for 1922

Is there a great difference among bees and queens? Mr. Beekeeper, with bees and queens a small difference counts high. A small per cent better laying queen will greatly increase the field force; this will insure a larger honey yield per colony. A small per cent better worker will aid wonderfully. A small per cent more gentleness will greatly reduce the stings; this increases the efficiency and speed of handling, not counting the pleasure. A small per cent of better marking adds wonderfully to the beauty of the colony. By developing the small quantities of my bees and queens I have attained marked success in producing better queens and bees. My aim is to produce bees and queens that will meet the high standard required by beekeepers. Let me book your order for 1922. One-fourth the full amount will insure your getting bees and queens when you want them most next spring. Perfect satisfaction, safe delivery, and pure mating guaranteed. Pure Italian bees and Three-band Italian queens of the better kind.

Untested—1, $1.50; 6, $7.50; 12, $13.50. Selected Untested—1, $1.75, 6, $9.00; 12, $16.50. Tested—1, $2.50; 6, $13.00; 12, $24.50. Selected Tested—1, $4.00; 6, $22.00; 12, $41.50. One pound bees, $2.75; two pounds bees, $4.75; three pounds bees, $6.75. If queen is wanted with bees add price. Write for prices on large lots.

N. FOREHAND - - - - RAMER, ALABAMA

PACKAGE BEES

All bees are shipped on a standard Root frame, emerging bees with honey.

April 15th to May 10th Shipments.

1 pound bees, with frame	$2.50
2 pounds bees, with frame	3.75
3 pounds bees, with frame	5.00

Add price of queen if wanted.

Untested three-banded	$1.50
Tested three-banded	1.75

For shipments after May 10th deduct 12 per cent.

Please order from this advertisement. 15 per cent down to book orders. Balance fifteen days before shipping

L. C. Mayeux

BOX 15, HAMBURG, LOUISIANA.

Package Bees
----AND----
Reliable Queens

GOLDEN AND THREE-BANDED ITALIANS

We are now in a position to accept orders for queens and bees for spring shipping in large quantities. We have the stock and experience necessary to handle your orders, whether large or small.

1-lb. Package with Queen	$3.00
2-lb. Package with Queen	5.00
3-lb. Package with Queen	7.00
Tested Queen 1, $2.50; six	12.00
Untested ....1, 1.25; six	7.00
Select Untest. 1, 1.50; six	8.00

We are in position to fill orders from 100 to 5000 queens or packages. Safe arrival and satisfaction guaranteed. Terms, 25% to book orders.

E. A. SIMMONS

GREENVILLE - - - - ALABAMA

Our Crow

Will be sent you for the asking. This is our 1922 booklet with prices and twenty pages on selecting a strain of bees, rearing queens and packing and shipping bees. It tells you the good points to look for in a strain of bees and how

Forehand's Three Bands

The Thrifty Kind

have stood the tests of America's best apiarists for thirty years. It briefly tells of the growth of our business since 1892. This little booklet will be interesting and helpful to all interested in apiary culture. A copy will be sent you free.

W. J. Forehand & Sons
Fort Deposit, Alabama

QUEENS Package Bees and Nuclei QUEENS

Have a special offer to Beekeepers' Associations or groups of beekeepers that can use a car of bees at a time, 800 to 1000 packages. We are prepared to load 2 cars a week after April 5th, 1922. Free ticket to the party coming down to go back with the car or I can furnish a man. This is the best way; no transferring from one car to another; bees go through in 3 to 4 days. Also special attention given to small orders.

1922 PRICES. BOOKING ORDERS NOW. SAFE ARRIVAL GUARANTEED.

1-pound package	$2.25 each;	25 or more	$2.15 each
2-pound package	3.75 each;	25 or more	3.60 each
3-pound package	5.25 each;	25 or more	5.00 each
2-comb nuclei	3.75 each;	3-comb nuclei	5.25 each

(Add price of queen wanted.)

1 Untested Queen	$1.50 each;	25 or more	$1.30 each
1 Select Untested	1.70 each;	25 or more	1.50 each
1 Tested	2.25 each;	25 or more	2.00 each
1 Select Tested	2.65 each;	25 or more	2.25 each

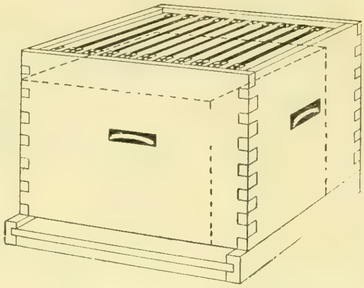
One-fifth down with order, balance just before shipping; or 4% discount for full remittance for December, and 3% for January orders.

THE NUECES COUNTY APIARIES, CALALLEN, TEXAS

E. B. AULT, PROP.

MODIFIED DADANT HIVE

Glance at the 11 frames, spaced 1½ inches from center to center, 11¼ inches deep of the Modified Dadant hive, giving adequate room for brood and stores in one hive body.



Note the outlines of the standard 10-frame Hoffman depth hive body compared to the Modified Dadant body. You can see why more swarms and less surplus come from small hives.

The Large Hive for Extracted Honey Production

Among the reasons why the Modified Dadant hive deserves a trial, especially where present equipment is not giving satisfaction are:

DEEP FRAMES, 11¼ IN.
FRAME SPACE VENTILATION
SWARM CONTROL EASIER
6¼-IN. EXTRACTING FRAMES.
LARGE 1-STORY BROOD NEST
ADEQUATE WINTER STORES
GREATER BROOD ROOM
STANDARD COVERS, BOTTOMS

Present equipment may be used as super equipment on Modified Dadant brood-chambers. Covers and bottoms for this hive are the familiar metal roof cover with inner cover and regular standard bottoms, except for larger dimensions.

THE STANDARD OF WORKMANSHIP IS "BEEWARE."

——Write for free booklet on this hive to——

G. B. LEWIS CO., WATERTOWN, WIS. DADANT & SONS, HAMILTON, ILL.

There's a distributor near you.

Indianapolis Is the Town You Want to Think of When You Need Beekeepers' Supplies

Our stock is 90% new, which insures you of getting clean supplies. Write us for prices. Catalog for the asking.

The A. I. Root Company
873 Massachusetts Ave.
Indianapolis, Ind.

He Doesn't Want a Pipe!

Jacksonville, Jan. 1, 1922.

The A. I. Root Co., St. Paul, Minn.

Naw! I don't want my *pipe!* And if I want my slippers, I can get them myself.

What I want is my bee supplies for the Honey Flow.

So I am going to order my bee supplies from you at St. Paul, where I can get 100% Quality and Service.

A trial order will convince anybody of their unexcelled service. They give special quotations on quantity lots, too.

JIM JACKSON,
Beekeeper.

THEY STAND
PROLIFIC
EXTREMELY
THE TEST.

It Pays to Buy the Best

THE QUEEN OF QUEENS

CAREFULLY SELECTED

Bred from Root Home-bred selected breeders—backed by over 50 years' experience in breeding the Best, most PROLIFIC QUEENS of today.

SPECIAL

Orders must be booked not later than March 15, 1922.
25 or more Untested Southland Queens, $1.00 each; 50 or more, 75 cents each.
25 or more Tested Queens, $1.75 each.
1-lb. BEES, Frame of Brood with untested queen, $5.00.
25 or more, $4.50; 50 or more, $4.00.
2-lb. BEES, Frame of Brood with untested queen, $6.00.
25 or more, $5.50; 50 or more, $5.25.

Health Certificate with each shipment.
Terms: 25 per cent deposit to book order, balance before shipment.
Shipping to begin about April 1st, 1922.

THE SOUTHLAND APIARIES
BOX 585, HATTIESBURG, MISSISSIPPI.

Mating, Safe Arrival and Satisfaction Guaranteed.

HARDY
SELECTED
CAREFULLY
DISEASE-RESISTING

17,203 Italian Queens

for 1921 and orders for many more turned down. We do not tell you this in a boasting way, but rather to show our customers what they have helped us to accomplish. If we did not have really **SUPERIOR ITALIAN STOCK** could we have sold that many and had so few complaints, or could we have built our queen business from nothing to that in eight years, if we had not given value received for our customer's money?

Italian Bees

of the same **SUPERIOR STOCK** in Packages, Nuclei and Full Colonies. We have 2,000 colonies headed with young queens. Can give you good stock at attractive prices. Let us quote you on your needs. Special prices on three-frame nuclei. Special attention to car-load shipments.

THE STOVER APIARIES, MAYHEW, MISS.

THREE-BANDED QUEENS

BEES IN PACKAGES FOR 1922

After twenty-six years of select breeding we have a strain of Bright Three-banded Italian Bees that are unsurpassed for their disease-resisting (especially European foul brood) and honey-gathering qualities. Read what others say about them:

"Enclosed fined $75.00 for 50 queens. I want these for requeening colonies that have European foul brood as I find your strain resistant. One of the queens bought of you last season built up from a nucleus and made 360 pounds of surplus honey."—Pennsylvania.

"I find your bees gentle, best of workers, and they stand the long winters here fine."—Manitoba, Canada.

"The two-pound packages I got of you last year made an average of 150 pounds of surplus honey. I find your bees not only hustlers but also gentle."—Illinois.

"The one-pound packages bought of you made a surplus average of 175 pounds of extracted honey and an increase of 39%, which is as fine a record as can be had in this locality, especially when the work is done entirely by amateurs."—Pennsylvania.

"I am well pleased with the bees I got from you last year as they paid for themselves and made a nice profit."—Iowa.

Price List of Packages With Young Queens by Express.

1-lb. packages, $4.00 each; 12 or more, $3.75 each. 1½-lb. packages, $4.75 each; 12 or more, $4.60 each. 2-lb. packages, $5.50 each; 12 or more, $5.00 each. 3-lb. packages, $7.25 ea.; 12 or more, $6.75 ea. If packages are wanted by parcel post, add 10%.

Select untested queens, $1.50 each; 12 or more, $1.40 each. Select tested queens, $3.00 each; 12 or more, $2.75 each. Wings of queens clipped free of charge.

We guarantee our bees and queens to give absolute satisfaction and to arrive in perfect condition with the exception of those shipped by express to Canada. The largest packages we are able to ship by mail to Canada are our 1½-lb. Canadian Specials. Bees will be shipped promptly date named, 10% cash with order and the balance just before shipment.

M. C. BERRY & CO., BOX 697, MONTGOMERY, ALA., U. S. A.
WAS HAYNEVILLE, ALABAMA.

Give Us a Trial

We Ship When You Want Them.
We Will Book Only What We Know We Can Fill.

Italian Bees and Queens
of the best strain

1-pound package - - - - - - $2.30 each
2-pound package - - - - - - 3.75 each
3-pound package - - - - - - 5.25 each

Young Queens Only

Italian Queens a Specialty

Write Us Your Wants.

1-Selected Untested, $1.50; 12 or more, $1.20; 25 or more, $1.10. Queens are raised for us by queen specialist and selected by us for our trade. 20% down books your order.

No Disease *Quality* *Service*

Valley Apiaries
A. W. Bryson, Prop. ***La Feria, Texas***

BEES---ITALIAN BEES---BEES

We are booking orders for colonies, nuclei, and packages of Italian bees. The prices are as follows: Full colonies with Italian queen at $15.00; two for $25.00. 3-frame nucleus with Italian queen at $6.50; 3-lb. pkg. with Italian queen at $6.50. All combs are straight, wired, and built from full sheets of foundation. Orders filled in rotation. No disease. Our apiaries are state inspected. Safe arrival and satisfaction guaranteed.

VAN'S HONEY FARMS

VAN WYNGARDEN BROS., PROPS. HEBRON, INDIANA.

Thagard's Italian Queens

Bred for Quality

We do not ask you to take our word for the high-quality queens we are breeding. Just read what our customers are saying about them.

April 1 to July 1	1	6	12	100
Untested	$1.50	$7.50	$13.50	$100
Sel. Untes.	1.75	9.00	16.00	125
Tested ...	2.50	13.00	24.00	200
Sel. Test.	4.00	22.00	41.50	335
July 1 to Nov. 1				
Untested.	1.25	6.50	11.50	
Sel. Untes.	1.50	8.00	13.00	
Tested ...	2.00	12.00	20.00	
Sel. Test.	3.50	20.00	36.00	

Breeders ....$10.00 to $25.00

Italian Bees

	1	25 or more
1-lb. package	$3.50	$2.75
2-lb. package	5.00	4.50

"The season up here has been very poor on account of the drouth, the average being 100 pounds. The ones I purchased from you average up 20 per cent more than the others and cleaned up a very bad case of European foul brood. I can say that I am well satisfied with your queens and will be glad to recommend them."

"At least 97 out of the 100 queens received from you a few weeks ago are now heading nice three-frame nuclei better than any package one can buy for $6.00 plus express."

"The 12 queens received in good condition. To say I am well pleased is expressing it mildly. They are the first real Italian queens I have ever received from any breeder. I would not dispose of them for $5.00 each."

"The queens you sent us in the spring are keeping from nine to ten frames of brood. They are certainly wonders as layers and honey producers."

Our Three-banded queens are bred from imported stock; they are hardy, prolific, gentle, disease-resisting and honey producers. Place our queens against any queens you may obtain anywhere, AND NOTE THE RESULTS.

Safe arrival, pure mating, and perfect satisfaction guaranteed.
Write for descriptive catalog.

THE V. R. THAGARD COMPANY

GREENVILLE, ALABAMA

A Superior Quality at Less Cost

SUPPLIES

MADE BY THE DIAMOND MATCH CO.

A Superior Quality at Less Cost

One-Story Dovetailed Hives

Complete with Diamond Cover and Bottom-Board, Hoffman Frames, metal rabbets and all inside fixtures.

Crates of five, eight-frame	$10.50
Crates of five, ten-frame	11.00

Standard Hoffman Frames

100	$ 5.50
500	25.00

Aluminum Honeycombs, as now made by Duffy-Diehl Co., are meeting with success. We carry these in stock to supply Eastern beekeepers.

HONEY! HONEY! HONEY!

Beekeepers who are supplying Honey to a regular family trade, or who are located along the highways, and are supplying motorists, know that their customers want a honey of a uniform color and flavor. And unless the honey is at all times uniform in color and flavor, customers sometimes become dissatisfied. Our special blend of Fancy Honeys (liquid) is always uniform and is of a fine mild flavor, and will satisfy the most exacting trade.

Special Blend of Fancy Honey (Liquid)

10-lb. Tins, 6 per case	16c lb.
5-lb. Tins, 12 per case	17c lb.
2½-lb. Tins, 24 per case	18c lb.

Various Grades, Crystallized, 60-lb. Tins

Water White Orange	14c lb.
Water White Clover or White Sage	13c lb.
Extra Light Amber Sage	11c lb.
N. Y. State Buckwheat	10c lb.

GLASS & TIN HONEY CONTAINERS

2½-lb. Cans, 2 dozen reshipping cases, $1.45 case; crates of 100	$5.00
5-lb. Pails (with handles, 1 doz. reshipping cases, $1.35 per case; crates of 100	7.75
10-lb. Pails (with handles), ½ dozen reshipping cases, $1.10 case; crates of 50	5.75
60-lb. Tins, 2 per case—NEW, $1.30 case; USED	.25

White Flint Glass, With Gold Lacquered Wax Lined Caps.

8-ounce Honey Capacity	$1.50 per carton of 3 dozen
16-ounce Honey Capacity	$1.40 per carton of 2 dozen
Quart or 3-pound Honey Capacity	$1.00 per carton of 1 dozen

HOFFMAN & HAUCK, INC.
WOODHAVEN, NEW YORK

Texas Made Metal Combs

Note what some users of the Texas-Made Aluminum Honeycombs say:

I consider them a great success and cheaper in the long run than foundation. —T. A. Engels, Mineral Point, Wisc.

The Aluminum comb is worth many times its cost. The only fault I have is my regret that I didn't use more.—Arch G. Newbern, Villa Rica, Ga.

No appreciable difference between them and wax combs. Raised brood just the same the first time used.—Oscar C. Miller, 1217 Ashland Block, Chicago, Ill.

Don't want anything better during a honey flow.—R. A. Arnold, Woodward, Tex.

Four colonies provided with aluminum combs produced some surplus, whereas we got very little from others with wax combs.—Lowther Bros., Ferguson, Mo.

For extracting purposes I consider these combs ideal.—T. W. Burleson, Waxahachie, Texas.

Placed one frame in center of top body (over brood-nest) and two on one side. The one in center was filled with eggs 24 hours after put on. Did not expect this, as there were seven empty wax combs put on at same time.—Arnt Ronning, Alcester, S. Dak.

I consider these combs a success here, and this is a cold climate. John Santens, Hazelhurst, Pa.

I like the aluminum comb very much and want to replace all other combs with it. —Thornton Bogert, Cincinnati, Ohio.

After being built out there is no difference in choice of wax combs over aluminum by the queen.- M. O. Davis, Trimble, O.

My frames were filled in eight days, and I extracted 45 pounds of fine buckwheat honey from eight combs.—Wm. J. Shaffer, Waverly, N. Y.

I believe the aluminum combs are the cheapest in the long run. They are here to stay, for they are giving good results. —J. B. Sanderson, Fredericksburg, Ohio.

I put four combs of aluminum and four frames with full sheets of foundation in the hive at the same time. The queen laid a few eggs in the center of each comb, and the bees put what little honey that was coming in around the outside of the comb before they ever started to work on the wax foundation.—Oscar Lehman, Menomonie, Wisc.

You Can Get the Same Results

Buy Texas Made Combs from your regular dealer. Any bee-supply dealer can furnish them. They are now carried in stock by the following:

In the East:

G. B. Lewis Co., Albany, N. Y.
Fred W. Muth Co., Cincinnati, O.
G. B. Lewis Co., Lynchburg, Va.
Deroy Taylor Co., Newark, N. Y.

In the West:

Chas. H. Lilly's Co., Seattle, Wash.
Western Honey Producers, Sioux City, Iowa.
Colo. Honey Producers' Assn., Denver, Colo.
B. F. Smith, Jr., Fromberg, Mont.
G. B. Lewis Co., Wichita, Kans.
Superior Honey Co., Ogden, Utah.

In the North:

Dadant & Sons, Hamilton, Ill.
A. G. Woodman Co., Grand Rapids, Mich.
G. B. Lewis Co., Watertown, Wis.
Standard Lumber Co., Winona, Minn.
Minnesota Bee Supply Co., Minneapolis, Minn.

In the South:

J. J. Wilder, Waycross, Ga.
G. B. Lewis Co., Memphis, Tenn.
Texas Honey Producers' Assn., San Antonio, Texas.
Crenshaw Bros. Seed Co., Tampa, Fla.

Lower Prices

For the season of 1922 the prices on Aluminum Honeycombs are greatly reduced.

Modified Dadant or Jumbo frames	$6.00 for 10
Langstroth or Hoffman frames..................	5.00 for 10
Shallow extracting any style..................	4.50 for 10

The above prices are f. o. b. factory or dealer's stock. Write for quantity discounts on orders of 500 combs or over.

Be sure to buy the combs manufactured in Texas by

THE ALUMINUM HONEYCOMB CO. OF TEXAS, SAN ANTONIO, TEXAS

HUBAM

Put Your Bees in the Center of Opportunity

and they will produce for you a successful honey crop. Exceptionally low prices on lots for honey purposes. Guaranteed against impurities until safe in your hands

Certified-Pedigreed Northern-grown

MICHIGAN
FARM BUREAU
BRAND
Quality-Purity-Service
SEEDS

Correspond Immediately for Particulars & Quotations

MICHIGAN STATE FARM BUREAU
BOX C-1 SEED DEPARTMENT BOX C-1
LANSING MICHIGAN

We said last month that we loved to quote prices.

We like it just as well this month.

Others are telling us about their 1922 needs. Why not you?

Best of all, they are "Root Quality" goods.

If you haven't thus far----

---Let us send that catalog.

---Send us that list of goods
for quotations.

---Ship us your beeswax.

If today were the middle of the honey flow, and you were short of goods, how would you feel today?

LOOK AHEAD!

M. H. HUNT & SON, LANSING, MICH.
510 North Cedar Street

WHAT CONSTITUTES

The Best Big Hive?

Isn't the big hive that the bees accept as readily as any hive, that costs only a trifle more than the standard-sized hive, that takes the regular 10-fr. Langstroth supers, and standard-sized covers, bottom-boards, etc., thus minimizing expense—isn't this the best big hive? We think it is, and so for more than 20 years we have manufactured just such a hive, called the

Jumbo Hive

It fully meets the requirements of the beekeeper who for any reason wishes a bigger hive than the old reliable Standard hive taking 10 Langstroth frames. But the Jumbo changes Langstroth dimensions only in depth, the hive being $11\frac{13}{16}$ inches deep while the Standard is $9\frac{9}{16}$ inches deep, and the frames to fit the Jumbo hive are 11¼ inches deep, or 2⅛ inches deeper than the regular Langstroth frame. It has 3400 square inches of comb capacity, or 27% more than the Standard. This gives room for the laying of the most prolific queen in the brood-chamber, as well as for 15 to 20 pounds of stores.

We can't say that the Jumbo, any more than the biggest big hive, entirely does away with swarming or always assures sufficient winter stores. The difference of locality and management may make this impossible. In some localities the big hive may be preferable. Where it is preferable, the Jumbo meets every requirement and has the added advantages of low price and takes standard equipment—a great economy in labor and first cost.

Standard 10-frame Langstroth Hive.

Jumbo Hive.

Same dimensions except in depth—same equipment above the brood-chamber. Jumbo hive-body costs only 15c more than Standard, and Jumbo frame (needed only in the brood chamber) costs only ½c more than Standard frame; Jumbo sheets of foundation cost only a trifle over 3c more than Standard foundation sheets—or the Jumbo hive with frames of foundation costs only 50c more than the Standard hive with frames of foundation.

Write us for fullest information about the Jumbo—the leader of big hives.

FREE—Send for sample of Airco foundation and Root sections.

DON'T BE LATE.—Manufacturers have only a very small amount of bee supplies in their warehouses. Business conditions don't warrant tying up capital in this way. Order now. Next spring, if there is a rush, you may not be able to get supplies at all when needed.

THE A. I. ROOT COMPANY, MEDINA, OHIO.

Branches at New York, Philadelphia, Chicago, Indianapolis, St. Paul, Norfolk, New Orleans, Savannah, Ga.; The A. I. Root Co. of Texas, San Antonio; The A. I. Root Co. of Iowa, Council Bluffs; The A. I. Root Co. of Canada, Ingersoll, Ont.

[illegible]
Agricultural
College

Gleanings
in
Bee Culture

Let the March winds blow.

Volume L March Number 3

GET OUR 1922 PRICES ON

Supplies

* * * *

Hives

* * * *

Miller's California Foundation

* * * *

Queens

* * * *

"First Aid to Amateurs," a pocket edition of beekeeping for beginners. By Henry Perkins. Price 25 cents.

* * * *

THE MILLER BOX
MANUFACTURING CO.
LOS ANGELES, CALIF.

"GRIGGS SAVES YOU FREIGHT"

TOLEDO

How about supplies for next season's use? A complete stock always on hand and of THE BEST GOODS MADE.

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LARGE CAPACITY
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W. W. BOYER & CO. INC.
BALTIMORE, MD.

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Entered as second class mail matter at the Postoffice at Medina, Ohio. Published monthly.
Space occupied by reading matter in this issue 55.3 per cent; advertising, 44.7 per cent.

THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

Editorial Staff
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A. I. Root, Editor Home Dept
H. H. Root, Assistant Editor
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HONEY MARKETS

U. S. GOVERNMENT MARKET REPORTS.

Information from Producing Areas. (First half of February.)

CALIFORNIA POINTS—Prospects for next season's crop considered favorable, both as to volume and quality, if spring rains are normal. The prolonged cold spell earlier in the season caused a setback to bees in some sections with many colonies considerably depleted in numbers. Prices show little change over those prevailing two weeks ago. Since the heavy rains many beekeepers have disposed of their reserve supply of honey, and those still holding are increasingly inclined to sell. "Honey Week," authorized by proclamation of the Governor of California for Feb. 6-11 inclusive, may slightly have helped retailers to dispose of their surplus stock, but apparently has not as yet stimulated buying from the brokers. Quotations continue largely nominal. Recent carlot sales of light amber alfalfa are reported at 6½c per lb.; one of light amber sage at 7½c, and one of white orange blossom and sage at 11½c per lb.

INTERMOUNTAIN REGION.—Bees generally wintering fairly well, but in need of early flight if spring dwindling is not to be serious. The cold weather and long confinement will mean a somewhat larger loss than normal. Spring feeding will be necessary with many colonies, due to open weather in fall which depleted stores. Crop outlook good for coming season. Supplies in carlot quantities clearing up, and local demand can be counted on to absorb small-lot surplus. Rather active inquiry received from both eastern and western buyers. The uniform carlot price for 5-gal. cans of white sweet clover and alfalfa is 8½c per lb., with occasional sales at 9c, and with less-than-carlots ranging 10-12c. Several carlot sales of Arizona light amber honey reported at $7.00 per case of 120 lbs. Comb honey of No. 1 grade white sweet clover and alfalfa generally selling $4.00-4.15 per 24-section case, with occasional sales high as $5.00. For beeswax 20c per lb. in cash or 22c in trade is being offered.

PACIFIC NORTHWEST.—The continued cold period, with little suitable flight weather, has caused a considerable loss of bees. The prospects for the 1922 crop are reported normal. Supplies of extracted honey are generally light, altho occasional beekeepers report much honey still in their hands. Light-colored extracted honey in small lots of 5-gal. cans is being sold at 10-12½c per lb.

TEXAS POINTS.—The bees are generally wintering with little loss, altho some beekeepers report dwindling as result of constant flying. Stores have been rapidly consumed. Brood-rearing commencing in south Texas. Prospects for the new honey crop continue doubtful due principally to lack of rain during fall and winter. Extracted honey in 5-gal. cans selling mostly at 8½-10c per lb., with chunk honey 4c per lb. higher. Beekeepers are receiving 22-24c per lb. for beeswax.

EAST AND NORTH CENTRAL STATES.—Wintering prospects greatly improved by several days of weather suitable for bee flights. Clover fields in northern part of area generally well protected by snow, but outlook for honey flow less favorable in southern section where many fields are bare of snow. Demand has increased somewhat, and the movement of honey is better than that of last month. Bottlers are offering 9½-10¾c per lb. for carlots of white clover in 60-lb. cans. Many small lot sales of this size container made at 11¾-15c per lb. Carlots of amber honey are quoted at 6-8c per lb., with smaller lots at 9-10c. White comb honey ranges $4.80-5.50 per case. Sales direct to consumer show great increase over those of last year. Some beekeepers are bringing in western honey to fill their orders.

PLAINS AREA.—The mild winter has been favorable to bees, but lack of snow has injured prospects for good nectar flow next season. Sales of extracted white clover reported at 12c per lb. in 60 lb. cans

NORTHEASTERN STATES.—Supplies in beekeepers' hands are practically exhausted as result of unusually good demand. The bees are wintering well in both cellars and outside stands. The outlook for the new crop is generally good, as clover fields are well covered with snow. Bees have enjoyed occasional flight days. Sales of buckwheat in barrels at 7c per lb., and at 9-10c per lb. in 60-lb. cans reported. Few sales made of extracted white clover in 60-lb. cans. Large lots of 24-section cases of white clovor comb honey have sold around $5.00 per case, with small lot sales direct to retailers and consumers at $5.75-6.50 per case.

CUBA.—Cuban honey continues to be quoted at 4c per lb. f. o. b. Recent heavy shipments to Holland reported at 54c per gal., including cost and freight.

Telegr. Reports from Important Markets, Feb. 14.

BOSTON.—No carlot arrivals reported since last report. Conditions practically unchanged with light demand and steady prices.

CHICAGO.—Since last report 1 car Nevada, 1 car Wyoming, 1 car Arizona, 2 000 lbs. Wisconsin, 3,000 lbs. Minnesota, and 3,500 lbs. Ohio arrived. Demand and movement slow to fair, market about steady. Extracted: Sales to bottlers, bakers and candy manufacturers, Arizona and Wyoming, per lb., alfalfa white 10-11½c, light amber 9½-10c. Michigan, Minnesota and Wisconsin, white clover 11½-12½c. California, white mixed mountain flowers 11-11½c. Comb: Sales to retailers, Ohio, Michigan and Minnesotas, 24-section cases No. 1 $5.00-5.50. Beeswax: Receipts moderate. Demand and movement moderate, market about steady. Sales to wholesale druggists, ship supply houses and laundry supply houses, California, Colorado and Arizona, best crude 30-32c, poorer 27-29c. Central American, best crude 24-26c.

NEW YORK.—Both domestic and foreign receipts limited. Demand moderate, market steady. Extracted: Spot sales to jobbers, wholesalers, confectioners, bakers and bottlers, domestic, per lb., California, light amber alfalfa 7-8c, light amber sage 9-9½c, few 10c, white sage 11-12c mostly 11½c, white orange blossom 12-14c, mostly 13-14c. Intermountain Region, white sweet clover 10-11c, few high as 12c. New York, white clover 11-12c, buckwheat 7-8c. West Indian, South American, refined 65-70c, few high as 75c per gal., poorer low as 60c. Comb: New York, 24-section cases white clover No. 1, $6.00-7.00 per case. Beeswax: Foreign receipts limited. Supplies limited. Demand moderate, market steady. Spot sales to wholesalers, manufacturers and drug trade, South American and West Indian crude light, best 22-25c, dark 15-18c. African, dark 16-17c, poorer low as 14c.

H. C. TAYLOR,
Chief of Bureau of Markets.

From Producers' Associations.

There has been no local market for honey during the past month. Northern buyers have been buying granulated honey for their market. Mesquite and cotton honeys preferred. Demand increasing. Producers closing out their stocks at 8 to 10 cents. Bees are not in the best shape. Cold and dry weather are unfavorable to both bees and honey plants. Much feeding is being done. Beekeepers, however, are optimistic and are buying supplies freely.

Texas Honey Producers' Association.
San Antonio, Tex. — E. G. LeStourgeon.

White extracted honey has recently moved from inter-mountain points in carlots at 8½c f. o. b. loading point. As far as we can find out there is but little fancy white in carlots left now. Some very good white comb honey is still available in carlots; but no interest was shown by jobbers for this commodity during the past month, altho a number of the important markets are practically bare of comb honey.

The Colorado Honey Producers' Association.
Denver, Colo. F. Rauchfuss, Sec'y.

Our members have consistently held their price on extracted honey at 8½c per lb., f. o. b. Idaho in carlots. We have been refusing 7½c, 7¾c and 8c for weeks, and are now selling carlots at our price of 8½c. Inquiry slackened noticeably just prior to the holidays but is now somewhat above normal, communications having been re-

ceived from buyers who were not interested in honey the first part of December. Local producers have sold considerable extracted honey in 5 and 10 lb. pails to local markets and it is almost a certainty that our 1921 crop will be cleared up shortly. Idaho-Oregon Honey Producers' Ass'n.
Caldwell, Ida. P. S. Farrell, Secy.

The A. I. Root Company's Quotation.

We are in the market for two carlots of white-to-water-white western extracted honey for which we will pay 8½c cash f. o. b. shipping point (about 10c to 10½c at Medina); also 1 carlot of white clover extracted honey for which we will pay 10½c f. o. b. Medina. Samples to be submitted. Not in the market for amber or light amber grades, and not in the market for comb.

No shipments of honey will be accepted under any conditions except as ordered by our purchasing department. The A. I. Root Company.

The Opinions of Honey Producers Themselves as Reported to Gleanings in Bee Culture.

Early in February we sent to actual honey producers and some associations the following questions:

1. What portion of the 1921 crop, if any, is still in the hands of the producer in your locality? Give answer in per cent.
2. What price are producers receiving for honey at their station when sold to large buyers? (a) Comb honey? (b) Extracted honey?
3. What are prices to retailers in small lots? (a) Comb honey, fancy or No. 1, per case? (b) Extracted honey in five-pound pails or other retail packages?
4. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair or rapid.
5. What is the condition of the colonies at present as compared with normal? Give answer in per cent.
6. What is the condition of the honey plants at this time as compared with normal? Give answer in per cent.
7. What is the per cent of winter loss of bees, if any, in your locality?
8. How does the number of colonies in your locality at present compare with last year? Give answer in per cent.

The answers as returned by our honey and bee reporters are as follows:

State	Reported by:	Crop unsold.	In large lots. Comb.	In large lots. Extract.	To Retailers. Comb.	To Retailers. Extract.	Movement.	Condition. Bees.	Condition. Plants.	Winter Loss.	Colonies.
Ala.	J. M. Cutts	50		$0.08			Slow	100	115		115
Ala.	J. C. Dickman	10			$5.75	.90	Fair	85	100	5	100
Ark.	J. Johnson	20			5.00	1.00	Fair	100	100	1	100
B. C.	W. J. Sheppard	5		.28		1.75	Fair	100	100	10	125
Cal.	L. L. Andrews			.12		1.00	Fair	60	100	30	85
Cal.	M. A. Sayler	10			3.60	.75	Fair	100	100		105
Cal.	M. C. Richter	20		.11		1.30	Slow	70	80		105
Colo.	J. A. Green	5		.08	4.60	.65	Fair	100	100	0	95
Colo.	B. W. Hopper	0					Slow	75	90	2	95
Conn.	A. Latham	20			7.00		Fair	125	100	0	120
Fla.	H Hewitt	3		.08		.85	Fair	100	100	2	105
Fla.	W. Lamkin	2			3.08	.75	Fair	90	100	1	105
Ga.	J. J. Wilder	40		.09		.72	Fair	100	100	5	90
Ida.	J E. Miller			.08		.60			100		105
Ill.	C. F. Bender	0			6.00		Slow	100	100	10	100
Ill.	A. L. Kildow	0	$5.25	.12	6.00	1.00	Rapid	125	100	0	110
Ill.	A C. Baxter	0			6.00	1.15	Slow	90	75	0	100
Ind.	T. C. Johnson	0			6.00	1.00	Slow	100	100	0	100
Ind.	E. S. Miller	35			6.00	1.00	Slow	100	100		100
Iowa.	E. G. Brown	20		.11	6.00	.85	Fair	90	75		100
Iowa.	W. S. Pangburn	27		.14	7.20	1.07	Slow	100			
Iowa.	F. Coverdale	2			6.50		Slow	80	75		80
Kan.	J. A. Nininger				6.00	.75	Slow	90	80		115
La.	E. C. Davis	20		.08		.85	Fair	100	100	0	125
Maine.	O. B. Griffin	12	6.00		7.00		Slow	100	90		90
Md.	S. J. Crocker, Jr.				4.75	1.00	Slow	90	100		125
Mass.	O. M. Smith						Slow	100	100	0	110
Mich.	L. D. Bartlett	5				.75	Fair	100	100	0	110
Mich.	F. Markham	10		.12		.80	Slow	100	100	0	110
Mich.	L. S. Griggs	10		.12	6.00	1.00	Slow	100	100		125
Miss.	R. B. Willson	8		.09		1.00	Fair	100	100	0	105
Mo.	J. W. Romberger	0	5.75	.11	6.25	.95	Fair		50		125
Nev.	L. D. A. Prince	0					Fair		100		
N. Y.	G. B. Howe	0		.13	7.20	1.10	Good	97		0	100
N. Y.	F. W. Lesser	0			4.50	1.00	Slow	100	100	0	125
N. Y.	Adams & Myers		5.75	.15	6.50	1.00	Fair		50		100
N. Y.	O. J. Spahn	10					Slow	100	100	0	100
N. C.	C. S. Bumgarner	10				1.25	Fair	110	125	0	110
Ohio.	J. F. Moore	10			4.80	.80	Slow	90	90		110
Ohio.	R. D. Hiatt				6.00	1.10	Fair		100		125
Ohio.	E. G. Baldwin	0						100	80		140
Okla.	J. Heueisen	0					Rapid	50	75	3	50
Okla.	C. F. Stiles	0				1.10	Slow	90	60	0	100
Ore.	E. J. Ladd	5			5.00	1.00	Slow		100	10	80
Ore.	H A. Scullen	10			5.60	1.00	Fair	90	90	1	110
Pa.	H. Beaver	7		.08		.65	Slow	95			100
Pa.	D. C. Gilham	15			7.00	1.00	Fair	95			125
Pa.	G. H. Rea	5			6.75	1.00	Fair	100	100		100
R. I.	A. C. Miller	0					Slow	100	100	0	100
Tenn.	J. M. Buchanan	10				1.00	Slow	100	100	2	110
Tenn.	G. M. Bentley	0					Slow		100		100
Tex.	T. A. Bowden	16				.80	Slow	90	80		90
Tex.	J. N. Mayes	2		.11		.60	Fair	75	60	1	90
Tex.	H. B. Parks	10		.09			Slow	110	85		115
Utah.	M. A. Gill	5			4.50	.60	Fair	85	100		110
Vt.	J. E. Crane				6.00	1.25	Fair	100	100		110
Va.	L. N. Gravely	25			3.60		Slow	85	75	15	105
Va.	T. C. Asher	5				1.25	Fair	80	90	2	95
Wash.	G. W. York	20	5.00	.09	6.00	.80	Slow				
W. Va.	T. K. Massie	0					Fair	95	80	0	85
W. Va.	W. C. Griffith	0									
Wis.	N. E. France	5			4.80	.75	Fair	100	100		80
Wis.	E. Hassinger, Jr.	4				.85	Slow	95	50		105

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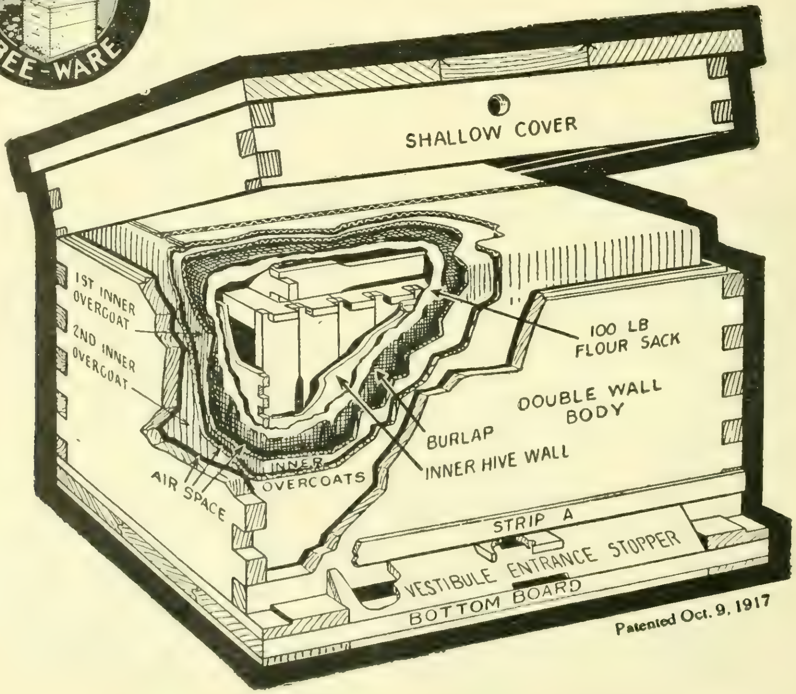
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Medium	5 lbs.,	68c lb.;	50 lbs.,	65c lb.
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We carry Aluminum Honeycombs as now made by Duffy-Diehl Company, in stock to supply Eastern Beekeepers.

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A BRIEF STORY

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This Year

Additional improvements are under way which make for economy for the beekeeper and the very best combs for the bees. These will not be offered until actual tests on a large scale have convinced us first of their practicability. We want the name ''Dadant'' to stand, as it always has, for a tried and true article which will stand the test of time.

DADANT & SONS, Hamilton, Ill.

GLEANINGS IN BEE CULTURE

MARCH, 1922

EDITORIAL

The Miller Memorial Library Fund.

AS mentioned last month we expect to publish the list of donors to the Dr. Miller Memorial Fund in the April issue, making it complete up to the time of going to press. This will enable us to include the amounts donated by the various beekeepers' associations during the winter, either as associations or as individuals, who made their contributions thru the secretary of an association. Gleanings has not heretofore published a list of donors to this fund, chiefly because the list has been constantly growing.

The committee having charge of this project have not set a time limit for contributions, but we have definitely decided to publish the list next month. In order that this list shall be as large as possible all contributions should now be sent promptly in order that the names may reach this office in time to be printed next month. The funds are in charge of C. P. Dadant, Hamilton, Ill., who is chairman of the committee, but contributions may be sent to any member to be forwarded to Mr. Dadant. The other members of the committee are Dr. E. F. Phillips, Bureau of Entomology, Washington, D. C.; E. G. LeStourgeon, San Antonio, Texas; B. F. Kindig, East Lansing, Michigan, and E. R. Root, Medina, Ohio.

We understand that this committee will soon make some important announcements in regard to plans for the Dr. Miller Memorial Library, now being considered.

In order that the names shall reach this office in time to be printed in the April issue it will be necessary to send them early in the month, especially those which are not sent direct. All names should be here not later than the middle of March, if they are to appear in the list.

* * *

The Aluminum Honeycombs.

SINCE the editorial comment on aluminum combs was made in the February issue of this journal, several letters have been received scolding the Editor for not discussing more fully the advantages and disadvantages of these combs.

Our readers may rest assured that if these combs prove to be certainly advantageous in honey production, Gleanings in Bee Culture will point this out immediately.

The stand that the Editor takes at this time, judging from his own experience and from reports received, is that aluminum combs are still in the experimental stage, and may never get out of that stage. They are accepted by the bees and filled with honey, altho the bees show a decided preference for natural combs. Brood is reared in them, but under some conditions only a part of the brood will develop, the combs often having a spotted appearance as if the queen was failing. Probably this is partially responsible for the difficulty experienced in the attempts to winter colonies on these combs in the North, tho no doubt the rapid conductivity of heat by the metal is the chief cause of this trouble, aluminum being one of the best conductors.

It now seems that if these combs should ever come into general use it will be for extracting combs instead of for brood-combs. They are not easily broken in the extractor, yet they require careful handling, for, unlike natural combs, the bees are not able to repair them when the cells are injured by rough handling. The larvae of the wax moth are not able to destroy these combs, but when they are exposed these larvae spin their cocoons in the spaces between the metal and the frame, sometimes destroying the frames by cutting away wood, besides injuring the combs otherwise.

Perhaps these difficulties can be overcome after further experiments, and, no doubt, aluminum combs will give better results in some climates than in others. It would certainly be unwise for any beekeeper to install an extensive equipment of metal combs without first trying them out thoroughly on a small scale for his conditions.

* * *

Good Roads and Beekeeping.

ACCORDING to reports of the Bureau of Public Roads of the United States Department of Agriculture 11,930 miles of roads were constructed under the joint supervision of the Federal Government and the states in 1921. The projects under way during the year amounted to 31,228 miles, or more than enough to encircle the earth. This represents only a part of the road work carried on in the United States during the year. While these good roads are not always built where the beekeeper needs to go in his out-apiary work, in many cases they open up new territory for outyards and greatly simplify their operation. In fact, good roads, automobiles and swarm-control are three great factors in the large increase in out-apiaries during recent years.

* * *

More Colonies of Bees Than Last Year.

THE figures given by producers on our market page, as to number of colonies, show a substantial increase over that of a year ago. In a few cases a decrease is shown, but these are offset by the many cases where there is a gain. Since these figures reflect, to a large extent, conditions found among commercial honey producers they indicate a spirit of determination in beekeepers as they adjust themselves to new conditions. While on first thought an increase in the number of colonies may suggest that the country may produce too much honey for advantageous marketing, it is well to remember that there is also a danger of producing too little to develop properly the consumption of honey. As a result of all the agencies that have been at work during the past six or eight months pushing the sale of honey, a great multitude of new consumers have learned that honey is good and that it leaves a taste for more. When beekeeping finally comes into its own, this country will produce many times the amount of honey now being produced, and honey will be better known to the American housewife than it is now.

* * *

Disappearance of Queens in the Tropics.

ON PAGE 165 of this issue C. E. Bartholomew mentions the disappearance of queens as one of the difficulties of tropical beekeeping. Similar reports have come from Porto Rico as well as other tropical countries, even when the colonies are requeened annually. Mr. Bartholomew points out that it is the young and most prolific queens that most commonly disappear. This loss of queens, often occurring when the bees are not rearing brood, causes serious winter loss, frequently much greater than the winter losses in the far north. Why so many young queens should disappear is a baffling question that should be answered if possible.

Do laying queens sometimes risk their lives by taking a flight in the sunshine when they are not busy laying eggs? Mell Pritchard, queen-breeder for The A. I. Root Company, says that they do. He says that it is not uncommon for laying queens to take flights in late summer or autumn when they are not busy laying eggs. He has seen laying queens do this again and again, but always late in the season when they are laying but little if any. Perhaps this is more common in the tropics where the queens are idle for two months when the weather is fine for flight. In the north, the queens can not "take the air" during their idle months of winter because of cold weather, and during the summer they are too busy for play. It might be well for tropical beekeepers to pen the queens in their hives by means of entrance-guards, while they are not busy laying, to see if this would reduce the number that disappear. Perhaps clipping their wings would answer, tho, no doubt, an entrance-guard would be safer.

* * *

Setting Bees Out of the Cellar.

THOSE who winter their bees in the cellar can now tell with considerable accuracy how their colonies will winter, even tho they may be left in the cellar another month or more. If they are quiet now and show no signs of dysentery, they should come thru in good condition. If they are restless and spot the hives around the entrance they have already wasted themselves badly and cannot come out in the best condition, for their restlessness will increase from this time on until they are set out and have had a cleansing flight. About all that can be done now for bees that are restless is to try to keep them from flying out of their hives by lowering the cellar temperature.

Formerly great stress was placed upon the time and the manner of setting the bees out of the cellar in spring; but, since better cellars are being built and cellar wintering is better understood, there is less complaint about the two great difficulties of cellar-wintered bees in former years—drifting and spring dwindling. Bees that have wintered well in the cellar are not so much inclined to drift during their first flight as bees that have wintered poorly. Bees that have wintered well in the cellar should not be troubled with spring dwindling. In fact, they should be even better able to endure cold spells during the spring after they are set out than bees wintered outside. It was formerly thought that the bees wintered outside were hardened by the winter and that this hardening enables them better to endure cold spells in the spring, but apparently this is not true. Since cellar wintering is better understood, beekeepers are setting the bees out in the spring earlier than formerly thought advisable, and there is less anxiety about choosing exactly the right kind of day for this work. Probably most of the cellar-wintered bees will be set out this year the latter part of this month instead of in April, especially if the weather is at all favorable for so doing at that time.

A few simple precautions are usually sufficient to prevent drifting if the bees have wintered well, such as airing the cellar the night before the bees are set out, handling the hives carefully when carrying them out and contracting the entrances before the bees begin to fly. Many beekeepers now prefer to set the bees out at night or on a day too cold for them to fly so they will not rush out of the hive during their first flight, as they are inclined to do when set out on a warm day. By consulting the daily weather map it is usually possible to have notice a few days in advance of an approaching warm spell. Those who are not able to interpret the weather map should consult the teacher of physics in the local high school, who should be able to do this.

* * *

The New Beekeeping.

WITHIN recent years there has sprung up a new type of beekeeping, which is rapidly placing the industry on a safer basis than heretofore. Even in regions formerly thought not to be suitable for honey production on a commercial scale because of so many seasons of failure, "the new beekeeping" is quietly creeping in and paying crops of honey are being harvested. Honey is now being shipped in carload lots from localities formerly thought to be too poor for commercial honey production. Some say that the seasons are growing better, especially in the eastern portion of the country. So they are for those who have taken up "the new beekeeping."

What is this thing that is now sweeping over the country, converting poor localities into fair ones and good localities into splendid ones? The answer can be put into two words—better management. During the past 10 or 15 years great strides have been made in management to produce great colony strength at the right time to take advantage of the honey flow. For 30 years or more previously, beekeepers were so engrossed in the development of apparatus that some of the essential things in management were overlooked. Many beekeepers were so busy inventing new hives and appliances, designed to force nearly all of the honey into the supers, that they failed to see how this was leading to smaller colonies at the beginning of the main honey flow. Fortunately, the emphasis has changed from hives and fixtures to better management. This does not necessarily mean that hives and fixtures have reached perfection but that beekeepers are learning that equipment can not take the place of management. The result is much stronger colonies at the beginning of the honey flow than were formerly thought possible. It seems to have taken unnecessarily long for this change to come about, and the industry, as a whole, still has a long way to go in this respect.

"The new beekeeping" does not leave to chance anything vital to the prosperity of the colonies that can be taken out of the realm of chance. It demands in August normal colonies headed by a good queen, preferably young, and plenty of food. It demands that the colonies be put into as nearly perfect condition as possible for winter, even tho the latter part of the season is unfavorable for brood-rearing. It demands that each colony be supplied with an abundance of stores at the beginning of winter, and in the north where bees are confined to their hives for long periods, that the winter stores be of the best quality. It demands that these conditions be in all colonies at the beginning of winter and not in some of them. While such colonies are hard to kill by winter exposure "the new beekeeping" provides adequate winter protection for the severest winter every year instead of for the average winter.

In the spring "the new beekeeping" demands that every colony be given every opportunity to build up quickly to the greatest possible strength for the honey flow. When Doolittle pointed out the value of "millions of honey at our house" for this building-up period, together with an abundance of room in the form of good worker combs for brood-rearing, he pointed the way for "the new beekeeping." This new beekeeping takes no chances on nature furnishing enough food during this critical time, but every colony is supplied with a large reserve of honey —from 15 to 50 pounds.

"The new beekeeping" completely controls swarming, and during the honey flow conditions are brought about to induce the bees to work with the greatest possible spirit.

Of all things which help to bring about uniformly strong colonies at the beginning of the honey flow and therefore bring sucsuccess in honey production, the big and outstanding one is a great abundance of reserve stores, especially in the spring when workers are being reared for the harvest. Those who provide a second story two-thirds filled with honey as a food chamber at this time and permit the queen free range thru both stories are reaping rich rewards for doing so. In many localities this food chamber with its "millions of honey at our house" converts poor localities into good ones and practically eliminates poor seasons in ordinary localities. "The new beekeeping" is based largely upon this safety device. The food chamber, together with the slogan "millions of honey at our house," is now working miracles in honey production.

THE TIME FACTOR A BIG ONE

Importance of Being Fully Prepared for the Rush Season. Yard Work Should be Done During Honey Flow

By M. C. Richter

Time is a very important factor in successful beekeeping practices. Good management and the proper planning of work will bring about conditions where it is possible for us to avail ourselves to the fullest extent of the time factor.

Why is time such an important factor in beekeeping, and why should we place so much emphasis on this fact? It is because we deal with a colony of bees that can be worked at certain times only. Such times are relatively short and are, generally speaking, during periods of honey flows. Work at such periods, then, must be definitely planned beforehand, so that it may progress rapidly, smoothly and intelligently. There are many days during April and May when our time may be valued at several dollars an hour. Working weather with the bees during honey flows utilizes our most precious moments. We must do everything in our power so to arrange our work that our best energies may be expended with the bees themselves. A realization of this is of the utmost importance, and it is the purpose of this article to place special stress upon this fact.

Of course, there is a considerable amount of work to do with bees when they are inclined to rob, but the work can be minimized surprisingly thru proper management. We all unite in saying that there is no better time to work bees than during a honey flow. Let us then plan our work so that we may take advantage of this most important consideration.

In early spring, as far as it is possible, everything about the apiary buildings, the equipment and yards should be in readiness for the season's work. We will describe how our plant is arranged, but the reader must bear in mind that the description is useful only in so far as it is of value as a time-saver. The plant is a home extracting plant, located on a sage range and run for extracted honey. The apiary buildings consist of a warehouse (storage room for equipment), extracting room, tank room, shop, garage and wax-house.

The Warehouse.

The warehouse is amply large enough so that it will accommodate, without crowding, sufficient honey cases, extracting supers, tops, bottoms, excluders, etc. The arrangement of the equipment in the warehouse is such that each particular kind of equipment is set off in separate piles. We will take, for instance, the item of extracting supers. There are in the warehouse in March the following: (1) pile of supers containing No. 1 brood-combs, 10 to the super, this pile being limited in number to about one-third as many supers as we have colonies of bees; (2) pile of supers containing either No. 1 or No. 2 brood-combs containing eight combs to the super, this pile consisting of about three supers to every colony of bees that we possess; (3) pile of supers containing 10 frames of foundation each to the super, this pile consisting of one and one-third supers to every colony of bees. There are, perhaps, other piles, such as supers with wired or empty frames, or the empty supers themselves. In like manner there are separate piles of tops, bottoms, excluders, escape-boards, moving screens, nucleus boxes, etc.; but in each instance each pile is easily accessible and at a moment's notice may be made available to a waiting truck at the doorway. It need hardly be mentioned, I hope, that all supers, tops, bottoms, etc., must be in proper shape before being placed in piles. It is important to maintain an inventory of the various piles.

Extracting Room and Garage.

The extracting room joins the storeroom and adjoining this is the garage. They are all under the same roof. When a load of supers containing honey arrives at the plant, the truck is driven into the garage and the doors are closed. The supers are then carried into the extracting room (a door opens from the garage into the extracting room). During extracting, the empty supers, as soon as filled with wet combs, are placed directly on the truck and are thus ready to go to a yard when the proper time arrives. Here is a saving in the handling of a super of at least once and at a time when time is so valuable. There can be no robbing since both rooms are bee-tight.

When honey flows are rapid, the extracting outfit must be capable of handling at least a daily output of two to three tons. This is easily obtainable today with our modern appliances.

Shop and Wax House.

The shop is a corner in the storeroom and must be fitted so that it will take care of ordinary repairs in the extracting room and on the truck. Tools must always be replaced after being used, and the shop must be kept in order at all times. Endless time is lost during the busy season, if this important rule is not observed.

The wax-house is a building by itself, sufficiently removed from the other, on account of the danger from fire. This house may also serve for the purpose of handling American foul brood. Old, broken and diseased combs and scrapings are rendered into wax after the extracting season is over. The same holds true for all hive materials contaminated with American foul brood. This phase of the business can wait until the more pressing work of extracting is over. Cappings or wax from the capping melter may be refined with all other wax at the season's close.

Auto Truck.

Regarding the truck, it should need a certain amount of overhauling during the winter according to the amount of use to which it has been put. If used extensively it should be turned in for a new car every other year. It cannot be overemphasized that the auto truck must be in excellent mechanical condition for the season's work. A breakdown during the busiest part may prove very disastrous, and the upkeep and care of the car must be ever so closely attended to. Strict attention to this allows us more time for manipulation in the yards. Another factor is that the truck should be fast, and we know of no other truck that can do our work better than the Reo. A speed of 35 miles per hour with a full load on a paved highway is a great saving of time. Smokers, veils, hive-tools and fuel should be so arranged upon the truck that they are held securely, well protected and very accessible. Care must be exercised to protect a hot smoker from fire danger.

Before the season opens there should be enough fuel on hand to last thruout the busy season. We use burlap cut into proper lengths to fit the smokers. This fuel is stored where it may be drawn upon each morning before the truck starts on its daily run.

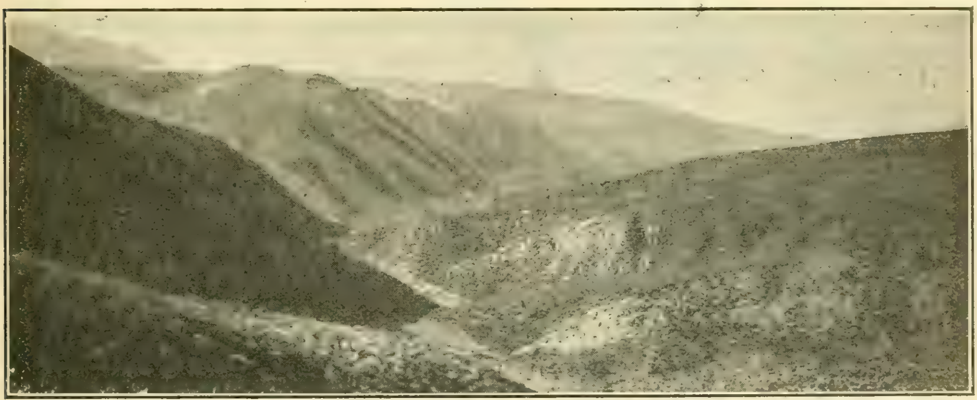
Yards and Their Arrangement.

We do not like to keep more than 75 or 100 colonies in a yard. There are several reasons: (1) During spring manipulations two men can get thru a yard in good shape on a fairly good bee day; (2) the demoralizing effect that it begins to have upon the yard when visited the second day during a partial or total dearth of incoming nectar, if the yard be in excess of 100 colonies; (3) the greater ease and rapidity with which a yard may be worked when there is very little inclination to rob; (4) as a disease-control measure; and (5) a truck load, taking all things into consideration, handles a yard of this size to the best advantage.

When possible the colonies are arranged in double rows, leaving a driveway between each pair of rows. This plan reduces the carrying of supers to and from the truck to a minimum. The hives themselves must sit level, but may slant slightly towards the front. If they do not sit true, combs drawn from foundation will conform more to Newton's law than to the form of the Hoffman frame. The result would be not only an imperfect comb but a loss of time in colony manipulation.

Colony Manipulation.

We all have a fairly good idea of what constitutes working weather with the bees. If we had but a few colonies there would be nothing to hinder us from working them always in ideal weather and everything would proceed beautifully. But, alas, when colonies run up into the four figures, often we must do a certain amount of work which is performed with great reluctance. It is an unpardonable sin, if traceable to faulty management, to arrive at a yard, we will say, at nine o'clock in the morning when bee weather actually commenced at eight o'clock. Again, it is little short of a crime to arrive at a yard with too few supers of foundation, tops, or excluders, or whatever other equipment might be needed. It would be all the more unpardonable to commence work with an asthmatic smoker, leaky veils or no hive-tool. The spring work is always planned in such a way that we spend the warm, sunshiny hours of the day with the bees, and we are at times in two or more yards during a single day. It is our endeavor to bring about conditions among the



Typical sage country of California.

bees so that we must manipulate them as little as possible.

The preparation of bees during the fall of the year, as outlined in last month's article on the ''Orange Flow in California,'' showed that under ordinary conditions no further attention was required until the colonies had bred up to nearly their full strength. When they have about reached the point where they might swarm, they are treated to prevent swarming. Thenceforth, as an aftermath of the swarming treatment, they are requeened and examined for purposes of giving more room or taking off honey according to the character of the flow.

Thus, it is seen that normal colonies under ordinary conditions are manipulated but little. Colonies that require the least spring work produce the most honey. Unfortunately, however, it is impossible to keep all colonies normal, and still further impossible to control abnormal weather conditions which bring about a greater amount of manipulation. For this reason and, likewise, for the reason that colonies vary so greatly as to the time when they approach the treatment for swarming, we must spend all the time we can get with the bees.

What is more important than doing the right thing at the right time? The difference between today and tomorrow may mean the difference between 50 pounds or 150 pounds to any individual colony. If we can so plan our work that we have made it possible to squeeze in an extra 20 or 30 or 35 minutes more per day actual working time in a yard, then we know we are working in the right direction. As we become more proficient, our bees will be kept better and soon we can keep more of them. Much that is written herein, you have read often. To plan in order to save time is obvious. Yet why is it that we heed so little that which is so obvious?

Big Sur, Calif.

SOME WESTERN HONEY-HOUSES

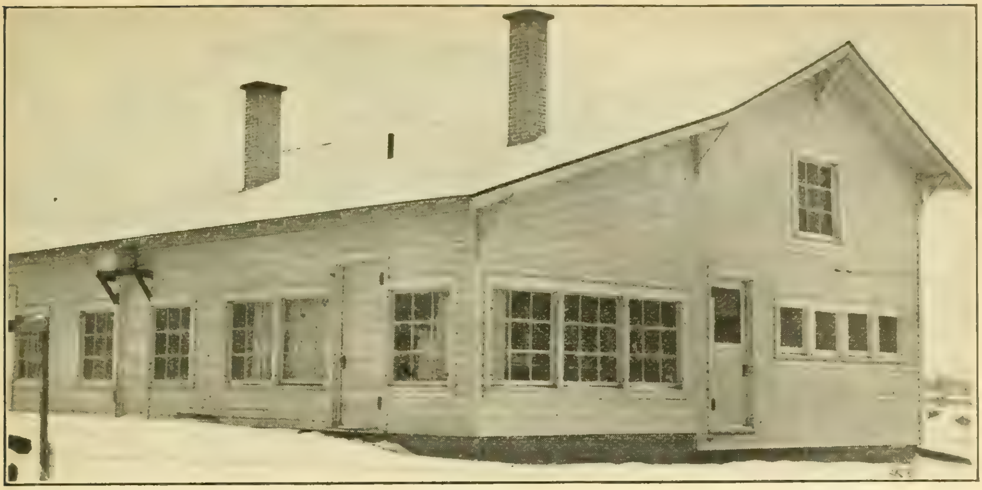
Permanently Equipped Central Extracting Plants Becoming More Common. Importance of Room and Light

By H. H. Root

TEN years ago a honey-house or a honey-building of any description costing thousands of of dollars was of rare occurrence. Likewise, even five years ago, a five or six horse-power steam boiler was not considered a necessary part of the extracted-honey producers' equipment. Today both are common.

We find, of course, a variety of opinions in regard to the proper construction of buildings for beekeepers' use. One producer, to keep down expense, will construct the cheapest shed that can be made bee-tight (and not all of them are bee-tight), of a size just large enough to house the equipment and a few supers of

Honey-house and workshop built by Roy Rabbitt, Caldwell, Ida. It has plenty of room and plenty of light.



Rear view of Roy Rabbitt's honey-house and workshop. The garage is located in the basement, the trucks having access by driveway to the middle story.

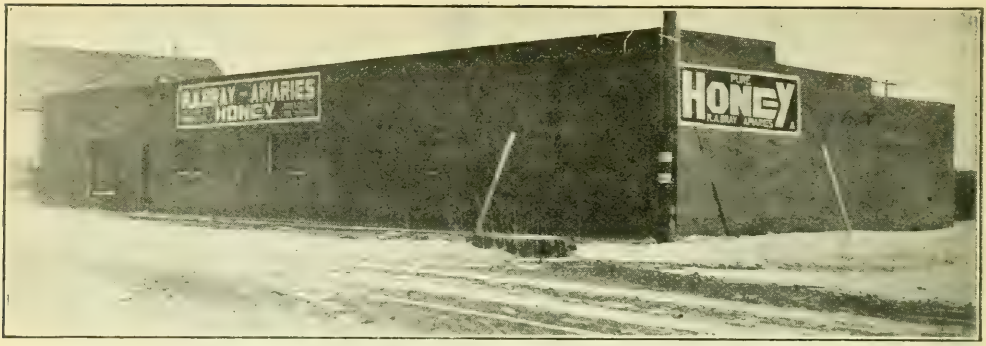
combs. Like the Israelites of old when a move to new pastures becomes necessary, the beekeeper can easily pick up and go, for the shed itself can be moved or it can be sold without much loss.

More and more the central extracting plant is coming to the front, owing to the improved roads and to better and cheaper trucks. Among the central-plant advocates we find a group who believe in constructing a building ample for their requirements, but of such a shape and style as to be readily reconstructed into a garage, barn, or even into a dwelling house, in case a move becomes necessary. In this way the property can be disposed of without great loss.

Then there are other beekeepers who believe in constructing a special building of a type exactly suited to their needs. This group seems to be increasing—a testimony in favor of the increasing stability of the honey business.

Roy Rabbitt of Caldwell, Idaho, has a very fine building. Mr. Rabbitt produces both comb and extracted honey, and his building is well adapted to the needs of both. Counting the basement, there are three floors. Because of being built on a sidehill, the first and second floors are on the grade line. Mr. Rabbitt has rooms for special purposes, including a garage for two trucks, workrooms, rooms for the storing of supplies, warm rooms for the storing of comb honey, etc. He has an abundance of light and electricity for both heat and power. By the way, Mr. Rabbitt

A creamery converted by H. M. West of Parma, Ida., into a honey-house. It was already provided with a horizontal boiler of good capacity, an insulated room, plenty of tanks, etc. A truck may be backed up to the basement or up the incline to the main floor.



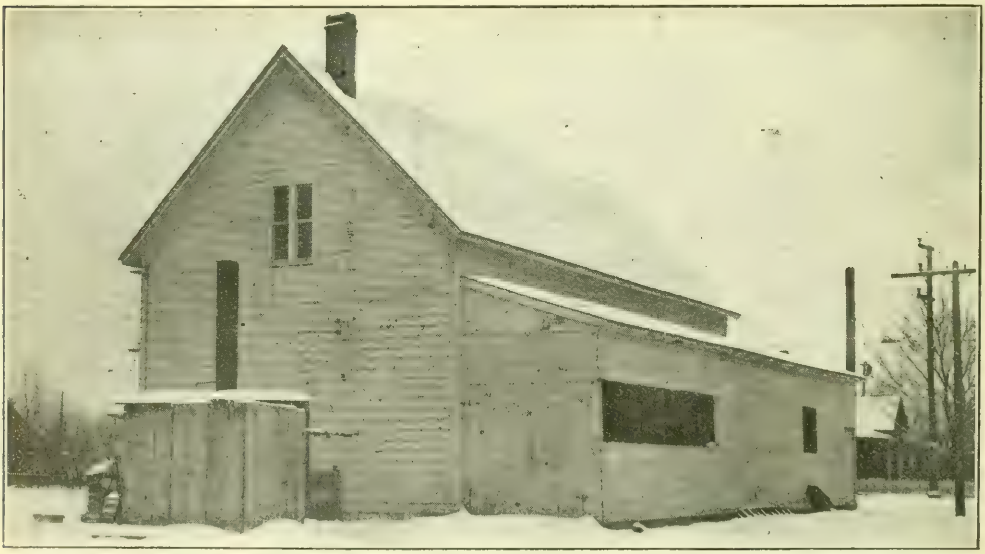
R. A. Bray's solid concrete honey-house at Big Timber, Mont. Mr. Bray lost a former honey-house by fire, hence when he built new he adopted fireproof construction thruout.

buys all of his supplies, as he figures that his time is worth more in other ways during the winter than in the construction of home-made appliances.

H. M. West of Parma, Idaho, was very fortunate in securing an abandoned creamery building all complete with steam plant, insulated room, etc. It is an ideal building for his extensive extracted-honey production. I do not feel that any power extracting plant is complete without a fair-sized boiler for steam. In extracted-honey production it is really indispensable. Most of the honey-houses in the Inter-Mountain district have these boilers in sheds adjoining the building, or, in some instances, right out in the open air. A 5 or 6 horse-power boiler is ample; the amount of coal used in a season is almost negligible; and, besides, there is an abnudance of steam for every purpose. Mr. West has a large horizontal boiler, one firing of which gives him all the steam he can use for several hours. He was fortunate in securing this old creamery.

J. M. Stark of Middleton, Idaho, has a commodious well-built honey-house right in town. A good-sized boiler at the rear keeps him supplied with steam. He can drive right into a shed adjoining the building. Long windows in the side and front of his house furnish an abundance of light.

R. A. Bray of Big Timber, Mont., some time ago had a disastrous fire, in which he lost his building and everything in it, saving absolutely nothing except a honey pump, which, being full of honey at the time, was not injured by the heat. His new building is constructed of solid concrete, and is a model structure in every way. It has concrete floors thruout and abundance of light, water, steam and all modern conveniences. One room is partitioned off for an office, another for the boiler, extracting equipment and tanks, while the rest of the



J. M. Stark's honey-house, Middleton, Ida. The vertical steam boiler in the shed outside furnishes ample steam for all purposes.

building is left for the storage of supplies, for his garage, etc.

One thing that impressed itself on my mind most forcibly when visiting these western beekeepers is the fact that room and light, plenty of both, are considered indispensable, and I am sure that they pay for themselves in the saving of labor. No one can do efficient work in dark, small, poorly ventilated rooms. The outdoors of the West seems larger and loftier than that of the East. Perhaps that is the reason why buildings used by the western beekeepers average larger than those used by eastern beekeepers.

In this brief article I have not attempted to give floor plans. I have seen extracting rooms by the score, but I have never seen two arranged just alike. This is not surprising. There are possibly 700 kitchens in Medina, and while some of them are the same in size and shape no two of them are arranged alike inside. The habits and ways of individuals are different, and so are the conditions. Just as no uniform arrangement of a kitchen would fit all conditions or suit all women, so no one arrangement of an extracting room will answer all requirements nor suit all extracted-honey producers. The floor plan, therefore, in my opinion can best be arranged by the beekeeper himself, who contemplates the construction of a building. In the next number, however, I shall have something to say in regard to the arrangement of extracting equipment. I shall discuss the various forms and parts of the equipment used.

WHEN AND HOW TO SET OUT

Take the Bees from Cellar in March, and Do It at Night. Sort the Colonies in Groups

By D. L. Woodward

IN the September issue of Gleanings I described our underground concrete bee-cellar, showing interior and exterior views of it. On the last day of November we finished putting the bees in this cellar for the third time since the cellar was built. Generally we have put our bees in the cellar about the middle of November; but, owing to the late fall and continued warm weather, we were able to leave them out much longer last fall.

Requires No Attention During Winter.

We moved to our winter quarters in Albany on December first, and I have not been able to visit our cellar more than twice since coming to town. At both times I found the thermometer at 48°F., the cellar free from moisture and the bees quiet. During the past two winters this cellar has held its temperature from 48° to 50° with not more than two degrees variation and with no attention whatever.

Last winter and the winter before we experienced less than a two per cent loss, which loss was mostly due to the poor condition of the bees at the time of going into the cellar. I believe that if we could be sure that all of our bees were in perfect condition for wintering when placed in the cellar, this cellar would winter one hundred per cent perfect without one moment's attention from December till April.

I certainly think that if some of our brother beekeepers, who practice wintering outside, either in packing cases or on their summer stands with the wind and snow as their only packing, could try out, for just one winter, a satisfactory cellar such as ours has proven to be, they would never return to outside wintering. Outside wintering has some advantages, but they are so few, compared with the advantages of a good cellar, that they are not worth mentioning.

We are wintering, this year, 307 colonies in this cellar. It took one man just one day to wheel the 300 colonies into the cellar and tier the hives up five high. The doors are locked, there is no more worry for us, and the bees are warm and comfortable.

When to Take Bees from Cellar.

If the latter part of March proves no exception to the past two or three years, our bees will come out of the cellar about March 20. For a number of years we have been waiting until about April 5 to 15 to take them out, or until the weather becomes somewhat settled. We now plan to have our bees on their summer stands the first seasonable weather after March 20.

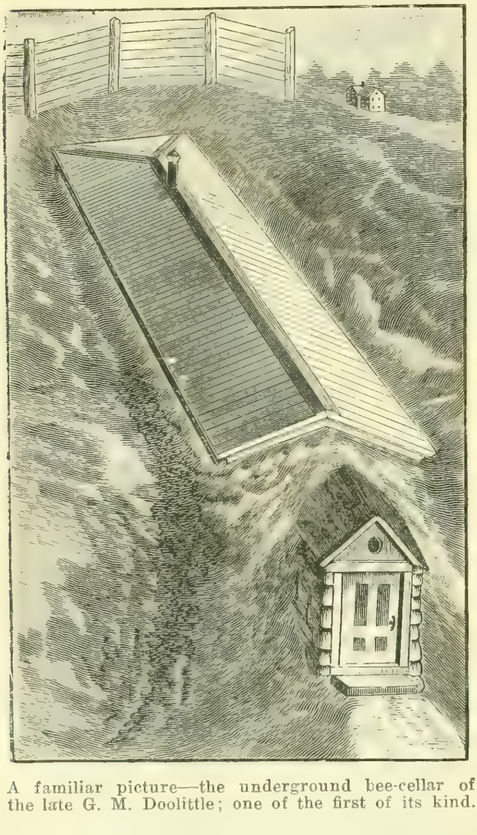
It is generally supposed, if bees are taken from the cellar too early, or before the weather is settled, that they are apt to receive a setback during the early part of April. Our experience for a few years past has proven to us that whatever setback they may receive at this time, they are still in the lead when the honey flow starts, which is about June 10 with us.

A couple of years ago we took out 50 colonies the latter part of March. The bees had had several good flights when we awoke one morning to find a foot of snow on the ground and a blizzard raging.

The snow drifted and covered most of the hives, so that we could discern where the rows were only by the little mounds of snow. A week of genuine winter weather followed, but the bees suffered no harm, and when the honey flow came on these were our strongest colonies. Experience has taught us that, if the bees can have a week of good weather with several flights during that time, they are in shape to withstand any bad weather that may follow.

Advantages of Setting Bees Out at Night.

Many beekeepers remove their bees from the cellar during the day, but we prefer to take them out at night, with the prospect of a cool and cloudy day to follow, so that the bees will not try to fly until the next warm day. Then they will start out gradually as the heat of the sun warms the hives from the outside and assures the bees that it is safe to venture forth. In this way there is no mad scramble to get out for the first flight, the bees fly out gradually, marking their location as they go out, and there is very little drifting.


A familiar picture—the underground bee-cellar of the late G. M. Doolittle; one of the first of its kind.

We do not try to remove our 300 colonies all in one night, but take several evenings to do the work. Sometimes a week will intervene between the first and the last lot taken out. Therefore there is less confusion in the yard, the following day, than if all were removed on the same night.

In handling the work in this way it is best to fill out all rows started each night in order to start at the end of a new row the next night; otherwise the bees in the hives near the ends of the rows will have marked their location, and when the row is continued the following night, these bees will become confused upon flying the following morning, to find that their home is in the middle of the block instead of on the corner.

Each morning after moving a lot of bees from the cellar, we proceed to clean out the entrances, put in the alighting-boards, and contract the entrances to about one inch, which keeps out the cool night air and helps to prevent robbing.

I have often been asked if there is no danger of robbing when bees are taken out in this way. All I can say is, that we have never had any trouble from this. No doubt if one is careless he would have trouble; but, if proper precautions are taken, there will be no robbing on this account. I think that if some who practice cellar wintering and taking their bees out during the day, will try the night trick, they will be convinced that it is far ahead of the daylight plan. They will have no flying bees, no gloves nor bee-veil to contend with, and the work is done during the coolest part of the day.

If you can not pick a moonlight night for the work, bring Henry around to the yard and let him cast his eagle eyes over the yard, which will answer just as well.

Separating Colonies of Different Strength.

In putting our bees into the cellar we arrange them in three classes—heavy, medium and light. The heavy ones are placed on the two bottom rows, the medium ones next and the light ones on the top. There are two reasons for this: one is to save lifting the heavy colonies so high, and the other is, that the colonies near the ceiling will not consume as much honey as the colonies next to the floor.

With us light colonies mean weak colonies, that is to say, that they were found weak in bees and light in stores at the last inspection in the fall. Colonies that were light but strong in bees were attended to at that time; but those that were weak in bees, and light, were considered to have enough stores to carry them thru till they could be attended to in the spring. If not, they were given enough feed to carry them thru the winter.

In taking the bees out we proceed to place our light colonies, which we know to be the weaker ones, on the stands in the front rows of the yard, as we have found that the front rows of any beeyard generally contain the strongest colonies in the fall, due to the fact that the bees from the back of the yard coming in heavily loaded will often drop down and enter the hives at the front of the yard. Likewise in moving bees to our outyards we always try to set the weaker colonies at the front of the yard, so that they will catch these workers which help to strengthen them.

Our medium colonies are then placed in the center of the yard and the heavy colonies at the back. Now we have the yard classified, and we know just which colonies need immediate attention without going over the whole yard.

On the first warm day that is suitable we proceed to go over the light colonies to ascertain if they have enough stores to carry them thru till the honey flow starts. If we find that some are short of stores, and we have not provided for this emergency by saving combs of honey, it is an easy matter to borrow some from the heavy colonies of the yard, provided they have no foul brood. If there is disease in the yard, this becomes a dangerous practice. After taking the bees from the cellar they should not be disturbed until the weather is settled, unless it is absolutely necessary. Care should be taken not to loosen the sealed covers, and let in the cold air at the top of the hive, as the bees cannot seal them up again at this time of the year.

When the apple blossoms bloom, we don our white suits and bee-veils, and the fun begins. I know that you are all anxiously awaiting the blossom time.

Clarksville, N. Y.

TREMENDOUS GROWTH FORCE

Investigations Reveal the Food Miracle in Royal Jelly. Drone Eats Five Times as Much as Worker

By C. W. Aeppler

WHEN I was assistant in beekeeping at the Wisconsin College of Agriculture, and also queen-breeder at that institution, I determined to study royal jelly or larval food, to find out, if possible, just wherein lay its great nutritive value. In searching thru all the chemical and bee literature, I was able to find only one person who had tried to throw light on this subject. Dr. Adolph V. Planta in 1888-1889 published an account of his investigation in "Zeit. f. Phys. Chemie." His chemical analysis, however, is only an elementary analysis.

Larval Food in Drone and Worker Cells.

It has been often stated that it takes two or three workers to support a drone. This may still be true, but I felt that a little investigation into the feeding of the drone and worker larva would not go amiss. The work was done during the clover honey flow, when the amount of larval food, supplied to the young workers, is at its maximum. Every beekeeper has seen that in early spring the larvae are fed more sparingly. Two average colonies were chosen in order to have a check on the weighings that were to be made.

The larvae from 100 worker-cells and from 100 drone-cells were removed. As nearly as possible, larvae were chosen of about the same age. The larval food was removed from the cells and placed in watch glasses, that were kept covered to prevent evaporation. This was done with each colony, great care being taken to have the watch glasses properly numbered. The larval food adhering to the larvae could not readily be removed, so that the results are only approximate, yet they give us an idea as to the relative quantities in each case.

Before the larval food had been placed in the watch glasses these had been carefully weighed on analytical balances on which one can weigh a ten-thousandth part of a gram (a gram is about 1/28th of an ounce). In other words, one can weigh a grain of dust on such a balance.

After the watch glasses containing the larval food had been weighed, the weights of the empty glasses were subtracted in each case, and the results were as follows:

DRONE CELLS—Colony A: 100 cells contained 1.046 gr: larval food, or .01046 gr. per cell. Colony B: 100 cells contained 1.0974 gr. larval food, or .01097 gr. per cell.

WORKER-CELLS—Colony A: 100 cells contained .1843 gr. larval food, or .001843 gr. per cell. Colony B: 100 cells contained .1970 gr. larval food, or .00197 gr. per cell.

From the above results it can be seen that a drone-cell contains about 5.5 times as much larval food as does a worker-cell. These figures speak emphatically in favor of full sheets of foundation to suppress the rearing of drones.

Chemical Analysis of Royal Jelly.

The greatest obstacle to be met in making a chemical analysis of larval food or royal jelly is the small amount of the material that any chemist can secure. Larval food is about 70% water. Cows' milk is about 87% water. The 30% solid material in larval food suggests the difficulty in obtaining enough for analysis. It took me two years to obtain enough larval food to conduct the analysis and feeding experiments. This larval food was obtained during the summer of 1915 and 1916.

As the larval food was removed from the queen-cells, it was placed in watch glasses, and dried over sulphuric acid in a dessicator. In addition to this, the air was pumped out of the dessicator once a day, in order to draw off any moisture that escaped from the larval food. In this way it dried very quickly, yet without any heat or chance of fermenting. Instead of being white or grayish white in color, it was now light amber in color, hard and brittle. The color was not due to chemical change. The solids had merely been concentrated.

I was unable to collect much more than a water glass full in dry condition the first summer, altho a lot of queen-cells were started in order to secure enough of the material to make the analysis worth while.

In the spring of 1916 I wrote 180 letters to as many beekeepers in every nook and corner of Wisconsin. I asked them to save all the queen-cells that they possibly could, removing the larvae, and sending the cells to me as soon as possible, after removing from the hives. About 30 beekeepers responded, and with what I received from them, together with that secured from the University queen-rearing yard, I had succeeded by fall (1916) in obtaining the larval food from about ten thousand queen-cells. The beauty of it was that it came from many sources, and any analysis conducted with it would be a good average of larval food as it exists.

In carrying out the chemical analysis, I had the co-operation of another student, E. G. Gross, who performed the analytical work.

The elementary analysis that had to be conducted, checks very well with the results of Dr. Adolph V. Planta, as obtained between 1885 and 1888. Dr. E. F. Phillips in his book, "Beekeeping," doubts the results of Dr. Planta, but we found them to be correct. However, his analysis is only an elementary one. No compounds were isolated, therefore, no conclusion can be drawn as to wherein lies the nutritive value of larval food.

The first procedure was to determine the different groups of organic and inorganic compounds, viz.: protein, fat, sugars and ash (mineral matter). The following results were obtained:

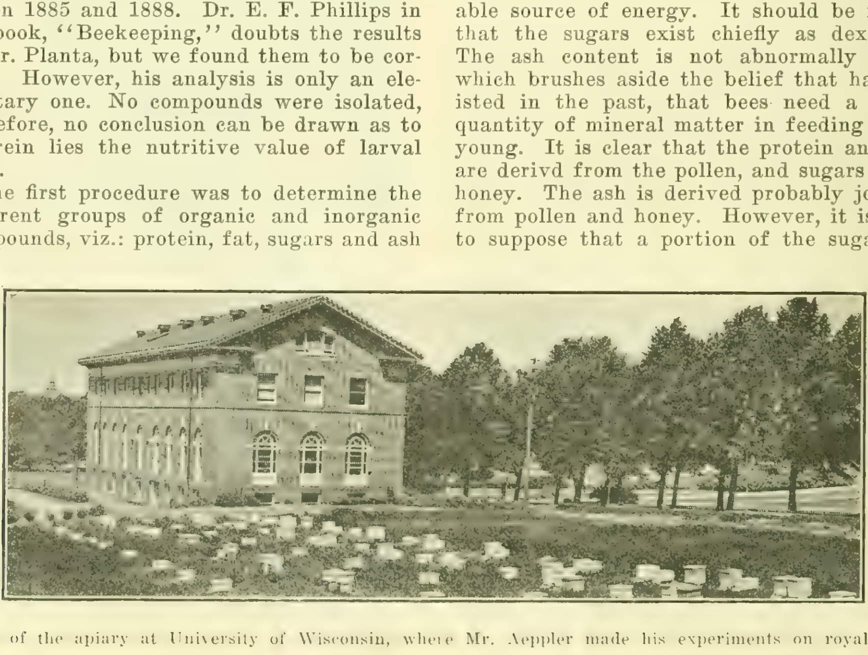
COMPOSITION OF LARVAL FOOD IN AIR-DRIED CONDITION.

Moisture after drying at 100°C	24.15%
Total nitrogen	4.58%
Total protein (factor 6.25)	30.62%
Total phosphorus	.67%
Total sulphur	.38%
Total ash	2.34%
Total sugars	14.05%
Total dextrose	11.70%
Total sucrose	3.35%
Total ether extract	15.22%
Iodine number of ether extract	12.51%

At least a dozen tables would be necessary to give all of the data that were secured in the analysis of the larval food, but only a mere summary of all of these tables and data can be given here.

The protein consisted of 76.37% of nonbasal nitrogen, of which 59.49% was amino nitrogen, 5.16% ammonia nitrogen, and 3.23% melanin nitrogen. The basal nitrogen constituted 14.23% of which 9.51% was basal amino nitrogen, 1.74% histidine nitrogen, 4.41% lysine nitrogen, 3.28% cystine nitrogen and 4.77% arginine nitrogen. The material was fairly rich in basic nitrogen, and unusually rich in cystine. It also contained trytophane and tryrosine.

Boiling it all down, we have three constituents to consider, viz., proteins, sugars, and fats. These three constituents of larval food determine its nutritive value. Probably the greatest factor of all is the high protein content. Few foods are so high in protein; and the form in which the protein exists, would allow us to conclude that the great nutritive value of larval food lies in its high protein content. The high sugar content gives to the larva a readily available source of energy. It should be noted that the sugars exist chiefly as dextrose. The ash content is not abnormally high, which brushes aside the belief that has existed in the past, that bees need a large quantity of mineral matter in feeding their young. It is clear that the protein and fat are derivd from the pollen, and sugars from honey. The ash is derived probably jointly from pollen and honey. However, it is fair to suppose that a portion of the sugars is



View of the apiary at University of Wisconsin, where Mr. Aeppler made his experiments on royal jelly.

obtained from pollen, inasmuch as the analysis of pollen shows the presence of sugar.

Some Deductions.

While the chemical analysis of larval food presents many new things to the beekeeper I feel that it presents the most to the queen-breeder. We know that the feeding period of the queen larvae is about 5½ days, or about 132 hours. All that any bee, queen, drone or worker, will deliver in terms of efficiency, is determined during the larval feeding period. For every hour less than 132 hours that a queen-larva is not fed on an excessive amount of larval food, at least 1% should be deducted in terms of decreased efficiency.

Vitamines in Honey.

At the suggestion of one of the professors I carried on some feeding experiments to determine, if possible, if larval food is rich in either fat-soluble "A" or water soluble "B" vitamines, since this might throw a great deal of light on the subject of the great feeding value of larval food.

Young rats were fed on purified food-stuffs that were lacking in one of the vitamines. The rats were kept on such a ration until they were in a sensitized condition, that is, until they were in such a condition that they would respond very quickly to the addition of this accessory.

Two young rats were fed on a complete ration, except that it lacked the fat-soluble "A," tho it was rich in water soluble "B," owing to the presence of 10 grams of wheat embryo. The ration fed was as follows:

RATION PERIOD 1.	Grams	PERIOD 2.
Casein	18.0	10% of larval food replaced an equivalent amount of dextrin.
Agar	2.0	
Salt	3.7	
Dextrin	76.3	
Part of the dextrin carried the alcoholic extract of 10 grams of wheat embryo.		

The larval food was given at the beginning of the second period. During the first week, the young rats made a slight gain in weight. However, during the second week they lost in weight. At the end of three weeks rat No. 2 ate rat No. 1 and during the fourth week showed a slight increase in weight, but did not grow as a normal rat should. From this it is evident that the fat soluble vitamine "A" is either lacking, or is present in only small amounts in larval food. However, it is highly probable that it is present in sufficient amounts to promote the natural growth of bee larvae, since all experiments that have been conducted seem to prove that the two vitamines mentioned are necessary for the normal development of all animal life.

Another lot of young rats were at the same time fed on another complete diet, except that the ration lacked the water soluble "B" vitamine. The ration fed was as follows:

RATION PERIOD 1.	Grams	PERIOD 2.
Casein	18.0	10% of larval food replaced an equivalent amount of dextrin.
Agar	2.0	
Salt	3.7	
Dextrin	71.3	
Butter fat	5.0	

The composition of the salt mixture used in the above ration and also in the previous ration was as follows:

	Grams
Sodium chloride	0.173
Magnesium sulphate	0.266
Sodium hydrogen phosphate	0.347
Potassium hydrogen phosphate	0.954
Calcium hydrogen phosphate	0.540
Iron citrate	0.118
Calcium lactate	1.300

This mixture would supply a normal amount of mineral matter in each instance, allowing no argument that lack of growth was due to lack of mineral matter.

When the young rats were in a sensitized condition, 10% of larval food was added to the ration, replacing an equivalent amount of dextrin.

The animals immediately began to grow again and take on weight. In every way they grew as a normal rat should. It is clearly evident that larval food contains considerable quantities of water soluble "B," enough to promote the normal growth of rats.

Larval food might be considered an end product of pollen and honey. Inasmuch as no fat soluble "A" is present in larval food to an extent sufficient to promote the normal growth of rats, it is fair and logical to believe that this accessory is not found in large quantities in honey. However, it is fair to assume that it is present in minute quantities—enough to promote the normal growth of the larvae.

In recent experiments, Professor P. B. Hawk of Jefferson Medical College, Philadelphia, proves that water soluble "B" is present in honey in only minute quantities, so that he was unable to secure the normal growth of rats when extracted honey was added to the ration. Therefore, it is fair to assume that the abundance of water soluble "B" in larval food, is derived at least largely from pollen. This corresponds with the statement I made in "The Beekeepers' Item" in 1918. Professor Hawk shows that fat-soluble "A" is present in comb honey.

Does this mean that extracted honey is not a good food? Certainly not. Extracted honey always was and always will be a good food. As a readily available source of energy, few foods can compare with it. Merely because it does not contain an appreciable amount of vitamines, it cannot be discounted as a food. What it lacks in this, it makes up for in its availableness as a food. Beekeepers, as a whole, will get the farthest by sticking to facts. There is no need of making vitamines a talking point in advertising honey, but talk palatability.

Oconomowoc, Wis.

FROM THE FIELD OF EXPERIENCE

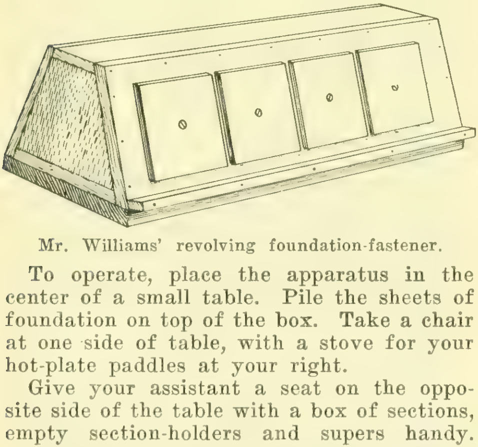
ANOTHER FOUNDATION FASTENER

Revolving Box Passes Work from Person Who Folds to One Who Fastens Foundation

Verily there is nothing new under the sun, especially in apiculture. About eight years ago I built a foundation-fastener similar to the one described in the December issue. It was surely rapid compared with the old way of fastening foundation, but I thought it somewhat cumbersome; so I built another along similar lines and thought I had improved on the old one.

This consists of a box 6 x 20 inches, with the top narrower than the bottom, thus making the sides sloping. Two sets of blocks are fastened on these sloping slides. It is not necessary to have these blocks slide up and down, since the foundation sits nearly perpendicular. This box has a 1-inch hole bored in the center of the bottom and pivots on a peg fastened in the center of a board 12 by 24 inches.

The illustration printed below does not show the pivoting device.



Mr. Williams' revolving foundation-fastener.

To operate, place the apparatus in the center of a small table. Pile the sheets of foundation on top of the box. Take a chair at one side of table, with a stove for your hot-plate paddles at your right.

Give your assistant a seat on the opposite side of the table with a box of sections, empty section-holders and supers handy. Your assistant folds four sections, places them over the blocks and then slips a holder over them. Now swing the box around so these sections are on your side, drop in the sheets of foundation and fasten them with the hot metal paddles. By this time your helper has the opposite side of the box ready with holder and sections. Reverse the box again, and while your helper folds four sections, the foundation cools enough for the holder of sections to be lifted off and placed in the super. Now keep busy. Don't visit and don't quarrel, and it will be necessary to call in more help to carry away the filled supers and bring you supplies.

Attica, Ohio. R. J. Williams.

SPACES IN THE HIVE

Allen Latham Prefers the Bee Space Below the Frames Instead of Above Them

On page 76 of February (1921) Gleanings appears one of the best articles that we readers have been favored with for some time. Every honey producer had best read it, and can make no mistake to read it the second time. Some of us may differ from Mr. Pettit as to how we shall carry out the principles involved, but we must agree with him in his statements of those principles.

I shall choose for my text a sentence found on page 77 in the first column, near the bottom. ''This leaves a full bee-space under the frames.''

One of the amazing things in scientific apiculture which a student of this science runs up against is the frequency with which the manufacturer or fate has fastened standard misfits upon us. I will not enumerate here the numerous weaknesses of the factory hive, or so-called standard hive, but will select only one weakness and that one the position of the bee-space between bodies and supers.

In my effort to find out why this space was placed above the frames and above the sections I have come to the conclusion that it must have got there thru the notion that the cover should come down flat against the hive walls. Instead of looking ahead and considering the inconveniences which would result if the space were put above rather than below, the early hive-makers saw only the disadvantage of setting on that cover. How simple it would have been if they had seen the advantages of the lower position of the space and had contrived some way of offsetting the difficulty if it were placed above! A little thought would have arrived at a simple solution.

I will now enumerate the disadvantages of having the space above the frames rather than below. First, in manipulating the hives one must always have some empty body or open-topped box upon which to place each super he lifts from a hive. If he does not he will crush many bees. He cannot set it down upon the neighboring hive. (Right here it will occur to many of my readers that a particular form of cover was the outcome of this difficulty. This cover met the needs, but the cover itself has so many disadvantages that the remedy was costly.) Second, when the supers are placed in the wagon or auto disaster is frequent. A burr-comb on the bottom of a frame causes the bottom-bar to be pushed up so that the comb above is slightly crushed, and leakage occurs. Often, too, a bottom-bar is bowed downward, and this again causes leakage. When the supers reach the shop or honey-room more leakage occurs. Follow those supers wherever they go and you will find much leakage. One must always furnish a rim of some sort upon which to place the bottom super, or else get floors of car and room sticky with honey.

Compared with the inconvenience of the bee-space above, consider that super with the space below. This super can always be set on the auto floor or upon the shop floor without first setting a something else upon which to place it. Even if there are lumps of comb upon the bottom-bars, or even if those bars are warped, they will not go below the bottom edge of the super. Leakage will occur only when the super is placed upon some loose small object like a chip, a butternut, or a nut from the auto. If one keeps floors free from loose objects, there is no likelihood of leakage when the bee-space is below the frames.

The comb-honey super also is much better with the space below. When set down on any but a flat surface with the space above, there is much likelihood of pushing the sections up and causing some of them to get jammed. The great advantage, however, is the tin-rest in the case of the bottom-spacing. Who can think of a poorer contrivance than the tin strip tacked to the bottom edges of the ends of the comb-honey super? These tins prevent a close fit of one super upon another, and they are the worst invitation for the deposition of propolis that man ever devised. When the space is below, a very narrow saw-kerf can be made about 15/64 of an inch from the bottom of the super edge and the tin-rest slipped into this. It is an arrangement infinitely superior to that in vogue.

All inner covers should be made with bee-space on either side. The double strip, that is, strip on either edge, greatly reinforces the cover and prevents to a large extent warping and twisting. It can be placed either side down, and is convenient when one wishes to present a clean surface to the bees. It also is better when the escape-board is inserted, for there is no chance that the hole be blocked by bottom-bars or top-bars.

I made my first hives with spaces above. I knew no better. As I learned better I adopted the other arrangement, making the top of the hive flush with the top-bars, and allowing the space below. I have now used this arrangement for 19 years and could not be hired to change.

Whenever I buy hives which I do not wish to sell again, I at once convert them to my arrangement. This is done very easily. The tin frame rest is removed. A strip of wood is inserted and the tin replaced. It is a simple thing if you have only a few hives, but to do it to 500 hives and the accompanying supers would mean some task. It is too bad the mistake was ever made in the first place.

Hard as that task would be, I verily believe that I should perform it if it came my way. I surely would do so rather than be put to the inconveniences incident to a bee-space above the frames. No reform can be brought about without some loss, and usually much labor. Allen Latham.

Norwichtown, Conn.

SAVES FEEDING IN THE SPRING

Five or Ten Acres of Yellow Biennial Sweet Clover Will Do This

Every beekeeper should have at least five to ten acres or more of this variety to build up brood-rearing early in the season for the honey flow from alfalfa and other clovers. It blooms so much earlier that a beekeeper can afford to pay $5.00 to $10.00 per acre for the land, for it will keep 100 colonies or more from starving, and it is much better than to have to feed, besides being cheaper.

Afalfa often fails to give any nectar the first blooming, but I have not had the yellow sweet clover fail in 20 years. Alfalfa failed to secrete any nectar in my locality the entire season of 1921; but I had 50 acres of the yellow sweet clover and about the same amount of the white, and my 100 colonies gave me a good surplus, some colonies filling five shallow extracting supers. In addition to the honey I secured a good crop of seed that I am selling at $6 per bushel.

In the 20 years or more that I have been raising the yellow sweet clover I have not had a failure in a honey crop; besides, it has built up the land greatly. It is far better for hay than the white, being much more easily cured. R. L. Snodgrass.

Augusta, Kan.

PROFIT IN BACKLOT BEEKEEPING

Began When 56 Years Old and Has Got a Lot Out of It

I am sending you two photos of my backyard apiary, taken in summer while the crop was on, and in the winter after the hives were packed. The photos might be of some use to you to show to other backlotters (beginners) what an ordinary backlotter with a few colonies of bees will do in the way of making money, and the other benefits he derives in the way of exercise and pleasure.

I started this little plant just four seasons ago, by purchasing for $3.75 two colonies of bees in old hives and transferring to new 10-frame hives. Since then I have each

FROM THE FIELD OF EXPERIENCE

Mr. Coolidge's backlot apiary in summer.

season added to it until I now have 20 colonies. When I started to buy bees I made up my mind to buy cheap, for I was afraid they would all fly away and leave me with the bag to hold. I now have 20 good colonies in 10-frame hives, 50 large supers all filled with good combs, one new Root-Cowan extractor, one 60-gallon and one 25-gallon honey-tanks, one hot-water uncapping tank, queen-excluders, bee-escapes, knife, and all the other necessary articles that go with the business; also 10 winter cases, that are take-down and interchangeable, and can be packed away in the summer.

Now I don't care to set any value on this outfit, but what I want to show is that it is all profit. The bees are the owners, it's theirs, they made it. I keep an expense and receipt account for them. The bees produced honey that I sold for $836.10; the cash paid out for the entire apiary and outfit was $283.14, making for me a profit of $552.96. The apiary is worth—what? Its net profit is—. The balance I leave to the backlotter to solve.

Now that's the money part; but say, I had the bee-fever right and that was worth all I paid out for the bees. I still have it, but I am more careful not to show the symptoms so strongly. I have gotten acquainted with lots of fellows that I would not have known if it had not been for the bees. The time surely does pass away quickly when two fellows get to talking beedom. I have missed some meals. My wife says I don't know enough to come home.

I am not very old, only 60, and what I knew about bees four years ago would make you laugh; but that's another story. All I want to say is, any person that will get a little bee-sense and a couple of colonies can have a hundred or two hundred pounds of honey each year. It's fun worth while. Try it.

Troy, Ohio. Chas. S. Coolidge.

Mr. Coolidge's backlot apiary in winter.

SIFTINGS

J. E. Crane

THE evolution of the perfect brood-comb, by H. H. Root, commencing on page 79, February Gleanings, is what I have been looking for for many months, and is of great value. Tracing the various efforts that have been made by various persons to secure the perfect foundation for a perfect comb during the past 50 years, he gives a very complete history, in brief, of the whole subject. The candor and conservatism of this article lead us to believe that the merits of the ''wood-base foundation'' have not been overdrawn. The next question we ask is, ''Can this wood-base foundation be manufactured at a cost that beekeepers can afford to use it in place of that now in use?''

* * *

On page 83, J. L. Byer speaks of the many kinds of pests ''that afflict almost all kinds of rural industries,'' so that it requires ''eternal vigilance'' to keep one from going under. He is quite right. The potato has its beetles and blights; the apple tree has, it is said, more than 150 enemies; the plum, its curculio; wheat, its blight; the cotton, its boll weevil; domestic animals, their diseases; bees, foul brood; and so on to the end of the chapter. Besides insects and blights, bacteria and microbes, there are storms and tempests, floods and drouths, and sometimes earthquakes thrown in for good measure. Surely it looks as tho there was some malign spirit abroad in the earth, with power to make all the trouble possible for us mortals. But it is not so. These difficulties are for our good, and our efforts to overcome them have helped to make the rural population of America the most intelligent and enterprising in the world. Take the boll weevil that has invaded the South and within a comparatively few years was thought to be a national calamity; it is now, if I am correctly informed, considered a blessing instead. It has in much of the Southland revolutionized farm life, compelling the cultivating of a large number of crops in the place of cotton, requiring greater intelligence and in the end producing greater comfort and wealth.

* * *

The beekeepers of the country owe a debt of gratitude to Arthur C. Miller for his painstaking experiments in curing European foul brood, as given on pages 86 and 87. I believe any one who has had much experience with this kind of disease will be ready to admit that there is a virulent type of European foul brood that does not readily give way to the dequeening and Italianizing method of treatment. It is simple, inexpensive and appears to be practical. This type of disease has doubtless much to do with the contradictory experience of beekeepers in trying to clean up European foul brood. For one I am glad Mr. Miller recognizes it as a distinct type.

* * *

E. F. Atwater, on page 85, discusses the advisability of removing the old bees from a colony before winter. Well, is it desirable? We know a strong colony will winter more successfully than a small one; and yet, if we put two strong colonies together in the fall, we do not feel at all sure that the double colony will be any stronger the next June than either one would have been if wintered separately. During the fore part of winter the old bees will help keep the colony warm and in fact all winter, if the hive is well protected, but they drop out very quickly when they begin to fly in spring. This should be the rule; but those old bees are more restless than the younger bees and may (and, I believe, often do) set up a restless condition in the colony, so that the colony is worn out before spring. So we may have two colonies side by side equally strong in the fall, and find one wintering well and the other very badly. Let us have young bees for winter if we can.

* * *

On page 75 is a short editorial on the Government Bulletin 998 that merits every beekeeper's attention, as it relates to the energy produced by bees under different conditions, and the tremendous amount of energy required by bees during a good flow of honey. I used to wonder, as doubtless many others have, when we first began to read of flying machines why such high horsepower engines were required—50, 75 or 100 and over, just for one man to fly. So we may learn from the bee how much energy is required for flight, as well as the value of honey as fuel.

* * *

''From North, East, West and South,'' the reports are very favorable for a bumper crop for 1922. It would seem as tho conditions were more than usually favorable.

* * *

How much we are indebted to the kindly criticism of other beekeepers for our knowledge of our business! These criticisms have been like steppingstones to a broader knowledge of the science of beekeeping we might not otherwise have acquired.

* * *

Bill Mellvir may be a rustic jay, but his method of insuring his bees against freezing when his ''honey crop is sold'' is worthy the attention of every beekeeper; besides he is able to beat Walt Mason at his favorite trick. See Nov. and Jan. issues.

NOTES ON TRANSPLANTING

CONSTANCE ROOT BOYDEN
(Stancy Puerden)

THIS article is for the benefit of those beekeepers who have the hardihood to attempt to transplant those perennials commonly known as wives. It can be done, but the operation is attended with risk.

In the first place, unless the transplanting is done when the wife is young and not deeply rooted it is well to transplant one who has been frequently moved. Any nurseryman can tell you he moves his stock occasionally to insure a compact ball of roots which will endure transplanting without great shock.

But if for certain reasons you deem it necessary to transplant a wife who is not young, who is very deeply rooted by reason of never having been moved, then be sure to dig around her with exceeding care, take as much soil as possible, and avoid breaking the little tender roots which reach so far into the soil in every direction. Even with the greatest care there is bound to be more or less shock, and for that reason and in order to make her fit her new location some pruning will be necessary. And when you finally plant her in the new location, see that she is properly sheltered for a few days and that her new environment is as much as possible like that from which she has been taken.

THE reason I can write on this subject with so much assurance is twofold: transplanting is one of the gardening operations with which I have been quite successful, and just now I am writing from the standpoint of the perennial herself instead of from that of the man who did the transplanting. When you read the ordinary book on gardening, you read what the gardener has written from his observation and experience. Wouldn't it be more to the point if the plants could tell you how they feel about it?

When my particular gardener (husband) first broached the subject of transplanting me to California this fall—he had talked of it often before in the years gone by until I had come to regard it as "castles in Spain"—I was more or less enthusiastic about it, generally more in the morning and much less at night when I was tired. Also the Stancy Puerden part of me regarded it as a glorious new adventure, while Constance Boyden thought of the parting with old friends and giving up her old home as nothing less than a tragedy. You know everyone has that dual personality, but he may never discover to what extent unless he contemplates giving up his old home and going to live among strangers in a strange, tho fascinating land. Then the struggle between the two personalities is enough to wear out the unfortunate individual who harbors them both.

Also it makes it so much harder when all one's friends are ranged on the side of the personality who fights transplanting. We know there are just as fine people in California as in Ohio—we have met some of them already and have received welcoming letters from many more—and yet, when you have lived in the same small town all your life, when you have scores of friends who call you by your first name, you feel deep in your heart that no new friends can ever fill their places.

There is one phase of leaving the old home town which is both a great pleasure and a pain. It is this:—you never realize how much your friends think of your family and yourself until you contemplate leaving them in this way. It is heartbreaking to have so many call and try to express how much grief they feel at the separation; to meet people who, you supposed, regarded your family as mere pleasant acquaintances and find that they seem to feel the separation as a keen, personal loss; to have people call for the first time in years to express their regret. And it is almost equally hard to have your friends, when they recognize that the step is inevitable, try to talk cheerfully about it, talk of the wonderful business opportunity and promise to visit you when their children are all educated.

But it is a great pleasure to listen to the very kind words which are spoken of your husband, your sons and your daughter. You know we mothers all secretly feel that our families are a little exceptional, but we never realize to what extent our neighbors and friends share this feeling until we plan to leave them permanently. If you don't believe me, just try moving away from your home town and you will hear your family eulogized until you feel sinfully proud. Undoubtedly it is true "that a prophet hath no honor in his own country," but if he announced that he was leaving that country permanently honors would be heaped upon him.

As to leaving brothers and sisters, those by birth and those acquired by marriage, and nephews and nieces, no words can express the pain of the parting. It is especially hard when one has lived in a neighborhood surrounded by a large number of relatives. There is where the roots of the perennials become entwined with the roots of other perennials, with the result that transplanting breaks the tender roots not only of the plants which are moved but of those which are left. Indeed, the roots of two of the perennials in Rootville were so closely entwined that it was deemed best not to try to separate them, and therefore both were moved to California at the same time. Those perennials were my sister and myself, who have such similar tastes that we married brothers and have lived side by side practically all our married lives. I suspect our gardeners knew it would be extremely risky to attempt to separate the two families.

IN the case of perennials, not young, which have never been moved, it is a shock from which it is hard to recover when the home is sold. The house is not the home, and yet, when the house was planned and built by your husband and yourself at the time you were married, more than 23 years ago, when your three children were born in it, when you have remodeled and improved it from time to time, when you have planted shrubbery and flowers around it, you love every stick and stone in it, and the dismantling and giving up possession is a keen sorrow.

In our own case it seemed to me that in those last few weeks I could read in the dear old house a chronicle of the love and thoughtfulness of my husband and children. At one time we removed a partition to make a large living room with fireplace where we loved to gather as a family. At another time a large sleeping porch, with three sides all wide, canvas windows, had been built to insure an abundance of fresh air and coolness for me at a time when I was out of health. Underneath the sleeping porch was a greenhouse or sunroom where I could coax a bit of spring into an Ohio winter.

The kitchen floor is covered with inlaid linoleum, firmly cemented all over the floor by the head of the house himself because the so-called ''experts'' would not do it according to the homemaker's ideas. Incidentally that floor was a joy to take care of. It never bulged and cracked nor shrank from the wall, and an occasional waxing made it easy to keep clean.

Adjoining the kitchen was the little breakfast alcove, designed to save the homemaker's steps, and underneath the edge of the gas range was the convenient dust chute, the description of which in these pages brought so many letters from interested readers.

A part of the house at which the head of the family felt much regret at leaving was the large attic den, lined with bookshelves and containing an office desk and convenient cupboards for a large stamp collection. There was also a pool table, for the den was originally designed as a room for the two boys of the family. When one of the boys went to college and the other boy rode his wireless hobby in the basement at all times and seasons, the den was left to dad and he made good use of it. I am inclined to think all men like one room in a house which has not a feminine touch about it. And I suspect the young wireless enthusiast felt an equal amount of regret at dismantling his apparatus in the basement. You see attics and basements do not seem to be popular in California.

TO return to the subject of transplanting perennials:—When our gardeners accomplished the feat of getting us to California they deemed it best not to try to set us out in permanent locations immediately and so secured one large pot into which they carefully placed us both, settling all the little roots, firming down the soil and watering plentifully. It was a wise precaution, for no sooner were those plants in the pot than the mercury began to slip down in the thermometer until that California thermometer looked so much like one in Ohio that you never could have told the difference. I believe it slipped clear down to 20° above zero in our vicinity, altho I am not sure it is good form for a Californian to mention it in writing to people who are still in the East. If you know anything about transplanting perennials, you know that even the hardy varieties will not stand freezing very well immediately after transplanting. However, thanks to the precautions of our gardeners we have stood it very well, even if we did droop a little for a few days.

But that weather really was very unusual. There, didn't I say that just like a Californian of two years instead of two weeks? I have also learned to say ''another perfect day''. and ''this is real California weather.'' But this cold weather was extremely unusual, for I believe no colder has been recorded by the weather bureau in this region, with one exception. And it froze so many nights in succession. Being accustomed to the cold out of doors in winter we should not have minded it except for our sympathy for the citrus growers and our sorrow at the temporary blighting of so much beauty; but when the gas pressure went lower and lower until it reached the vanishing point and the temperature of that ''furnace-heated'' house went down with it, our spirits followed.

But sunshine always returns in California, and we soon found we could keep fairly comfortable by staying on the sunny side of the house. In our rides with real estate agents to look up permanent homes, my sister and I have tried to impress it upon them that we must have houses every room of which has either a southern or eastern exposure, the former for the sunshine and the latter for the views of the mountains. We haven't found them as yet. A north room in California is an abomination, at least at this time of year. Why is the

(Continued on page 185.)

Beekeeping as a Side Line

Grace Allen

NEARLY ev-everybody enjoys the ancient tales of Greek and Roman mythology, born in the dim far-away childhood of the world, when dreaming wondering folk tried to account for the things around them, and tried to shape into something comprehensible their own groping and indistinct ideas of God's eternal forces, each one of which they considered a separate god. There is something majestic in their conception of Saturn (Time), the first and oldest of the ruling gods, as being the son of Coelus (Heaven) and Terra (Earth).

The story has it that Saturn overthrew his father, and was allowed by his brothers to be sole ruler of earth, on condition that he rear no male heirs. So one by one, as they were born, he devoured them—as Time still destroys what it produces. But Rhea, his wife, succeeded in saving three of the boy babies, Jupiter, Neptune and Pluto, giving their father Saturn large stones, which he unsuspectingly devoured instead. Later, Jupiter overthrew Saturn and became himself the supreme deity.

Where do the bees come into this story? Right at the birth of Jupiter. For his mother Rhea sought a cavern on the island of Crete at the time of his birth; the nymphs held him in their arms; one of them rocked him in a golden cradle; the Cretan priests, dancing around him, clashed arms and cymbals to prevent Saturn from hearing his cries. And the wild bees, guided by these clashing cymbals, hastened to the cave, to deposit their honey on his lips! Amalthea, the beautiful snow-white goat, put her two young ones aside to give "heaven's infant king" her milk. Thus milk and honey, so loved by all Oriental poets as symbols of peace and plenty, became the regular food of the infant Jupiter. Perhaps it was this habit, formed so early, that caused them later to be introduced, refined into ambrosia, the extract of purest milk, and nectar, the quintessence of honey, as the food of the gods themselves.

It was while Jupiter was still on the Cretan island, fed by the wild bees and nurtured by the snow-white goat, that one day in his play he accidentally broke off one of Amalthea's horns. At first it was made into a primitive drinking cup, but later Jupiter decreed that it should always be full to overflowing with whatever its possessor should desire—and so came the horn of plenty—the *cornu copiae.*

In recognition of their services and in deep gratitude, Jupiter, after he became king of all the gods, placed Amalthea and her two young ones in the sky as a constellation, and to the bees he gave such remarkable gifts that even to this day people say of them, "What marvelous creatures they are! I wonder how they can do all these things!" The story-tellers of old answered that Jupiter gave the bees these great gifts in return for their care of him in Dicte's cave, when they came so promptly at the call of the clashing cymbals of the dancing priests.

That is one of the most ancient of those old tales. Here is another later one. But no, let us lead up to this one the way Virgil did. First he tells his readers how to restock their beeyards, if by ill chance they should lose all their bees at once.

"But if thy whole swarm at a stroke should fail
With no stock left for breeding, let my song
Tell now a memorable art derived
From an Arcadian king, and show what way
When bulls are slaughtered oftentimes their blood
Out of corruption generates the bee.
From ancient lore I will the tale unfold."

Remember it was nearly two thousand years ago that Virgil wrote this, unfolding his tale from what was even then ancient lore. He assures his readers, too, in passing, that in Eygpt "their opulent ease depends upon this art."

Then he outlines the details of this truly marvelous system. First, he says, they build a narrow sort of building, roof it with tile and make the walls straight.

"They cut four windows open to four winds,
But not square to the sun. Then from the herd
They take a steer, a two-year-old, whose horns
Just curl upon his brow."

They kill this steer, most cruelly—may I not spare you the details?

". . . . The body then
Is laid in the enclosure; under it
They scatter boughs, the fragrant leaves of thyme
And cassia freshly pulled. This must be done
When first the Spring winds set the waters free,
Before the meadows blush with early flowers
Or ere the chattering swallow hangs her nest
Under the roof-tree beam. Soon waxing warm
The moisture rises in the softened bones,
And living creatures, wonderful to see,
Come forth, at first all footless, but erelong
With whir of wings the restless multitude
In swelling numbers on the liquid air
Bursts swift away."

Then he traces his system back to its origin, thus:

"What god, O Muses, labored to devise
This art for us, or how did human skill
Unto such novel venture find a way?
The shepherd Aristaeus . . . . ."

And he is off, fairly launched on our other old story.

The shepherd Aristaeus was the son of Apollo and the nymph Cyrene. He was brought up by the Seasons, who fed him on nectar and ambrosia, so making him immortal. The nymphs taught him how to cultivate olives—and bees. But when he had grown into quite a young man there came a year when all his bees died. Other troubles, too, came upon him. So one day he stood by the side of the river, ''all tears—making hard complaint and bitter cry'' to his sea-nymph mother. One wishes the nymphs had taught him to be more manly! (Yet after all, making hard complaint and bitter cry, and asking to be helped out of trouble is still a common human custom.)

Well, in this story, the nymphs were down in their chambers below the waves, sitting in a circle on their crystal thrones, spinning rare fleeces on their looms and listening to one of their number tell beautiful astonishing tales of the love and adventures of the gods. They heard the cry of the discouraged youth above, and one of them rose swiftly to the surface of the water to listen. ''Sister,'' she called down, in effect, ''Do help your boy, somehow.'' Cyrene then gave orders that he be admitted to this abode of the nymphs and that ''the opening river floods should yield free path to the young shepherd's feet. And lo! the waves rose like a hilltop round him'' and he passed down into his goddess mother's realm within the river's deeps. There he was in the midst of great wonders, at the very place where the rivers rise that sweep ''thru rich farms to meet the purple sea.'' Nymphs brought water and napkins for his hand-washing, ''piled the board with feasting and with wine-cups oft refilled—the sacred altars blazed with fragrant fires.'' And at last his mother told him to go for advice to Proteus, the old sea-deity, whose prophetic soul ''has vision clear of all that is and was and soon will be.'' She warned him, tho, he must use violence, and not be dismayed by the changing shapes of Proteus. ''No precept will he give save on compulsion,'' she told him.

In a cavern by the sea Aristaeus found him, the hoary old sea-god who shepherded the seals. He ''rushed in upon him with a mighty cry and bound him as he lay.'' The struggling god ''changed himself into all wondrous things; to flames of fire,to frightful monsters and swift-passing streams.'' But Aristaeus would not let him go. (Remember ''I will not let thee go until thou bless me''?) Finally Proteus yielded; and he told the shepherd that it was Orpheus who had sent these troubles upon him, to avenge the death of his wife. Which leads us straight into still another story.

Orpheus, son of Apollo and the muse Calliope, was a poet and philosopher, and even more a musician. From Apollo he had received a lyre of seven strings, to which he had added two more strings, thus increasing forever the music of the earth. Orpheus had wed Eurydice, one of the forest nymphs. But one fatal day, our young beekeeping shepherd Aristaeus, attracted by the surpassing beauty of Eurydice, had pursued her, and as she fled him in terror, she was bitten by a serpent, and died. ''The forest nymphs, her lovely peers, to the high hilltops sent their wailing cry.'' And poor desolate Orpheus took his lyre and went right down into the lower regions after her. There with the charm of his music he captivated everybody and everything. Instruments of torture stopped their turning, the guards were softened and even the rulers of the place became ''loving and pitiful.'' Permission was granted for Eurydice's return—but on this condition. Orpheus must go ahead and must not once, until they were wholly back in the sunlit places, look back at Eurydice, who was to follow at a distance. Back the long perilous way he went in safety, but just as the first ray of light touched them, ''ere he knew, a sudden madness seized the lover's mind—a fault to be forgiven, could hell forgive,'' and in his great anxiety to know if she were really coming, he sent one swift glance back at the beloved. Instantly loud thunder sounded three times, and Eurydice was snatched back—irrevocably—to the regions of darkness and desolation. ''Farewell,'' she cried, ''no longer thine, alas! but lifting thee my helpless hands.'' And up and down the land went Orpheus, ''beneath the windy crags and by the shores,'' lamenting his loss in music ''that made tigers tame and lured the rugged oaks to follow.''

Because in these sad-singing wanderings he was ever true to Eurydice, ''his faithful grief angered those Thracian maids whose kiss he scorned,'' and in a drunken orgy they killed him. But his voice with its last disembodied breath still cried ''Eurydice!''

It was this broken-hearted Orpheus, then, aided by the bereaved sister-nymphs, who had brought the avenging troubles upon the shepherd Aristaeus. So his mother, when ''Proteus' tale had end and with a leap he plunged him in the sea,'' advised her son to make sacrifice to appease all those offended ones; to take ''four noble bulls surpassing large and strong, and with them take as many heifers fair''; to build ''four altars at the wood nymphs' favored shrine''; to slaughter the victims; ''but leave behind their bodies in the leafy grove''; in nine days to come back. He did all that his mother said, built four altars and on them sacrificed the four noble bulls and the four unyoked heifers. Afterward, ''when the ninth morn had risen,'' he retraced

"His footsteps to the grove. There suddenly
Men saw a wonder passing strange: the sides
Of the slain cattle, now turned soft, buzzed loud
With swarming bees; the belly and the ribs
Were teeming; and the bees in formless clouds
Streamed upward to a tree-top, and hung down
In pointed cluster from the swinging bough."

Thus was the ''memorable art derived from an Arcadian king,'' showing how ''if thy whole swarm at a stroke should fail, with no stock left for breeding,'' ''the blood of slaughtered bulls out of corruption generates the bee.''

FROM NORTH, EAST, WEST AND SOUTH

In Northern California.—January was cold, especially the latter part of the month. Enough rain has fallen to take care of the needs of plant life. In the extreme northern portion of our section, rainfall is still below normal; but, as we reach the central portion of the state, we find that the normal amount has already fallen. On the whole, bees left their hives but little during the month, and consequently the consumption of stores during this period was but little. The last few days of January were extremely cold and nearly all portions of our district, including the valleys as well as the coast sections, were visited with snow. Altho practically our entire sage belt was covered with this blanket of snow, there need be no alarm concerning injury of this year's growth. The new shoots will withstand several inches of snow, and no setback need be feared. The manzanita buds look fine, and there will be an unusually heavy bloom during February.

The California State Beekeepers' Association will hold their annual meeting at Visalia on Feb. 8, 9 and 10. Unfortunately the convention will be over when these lines are read. It is our sincere hope that many will be in attendance, for under the untiring leadership of the Association's president, Mr. Cary W. Hartman, the meeting is certain of success. It need only be mentioned that the Association has been responsible for an executive proclamation, to the effect that the week of Feb. 6-11 has been designated as "Honey Week" in California. We remember very well California's honey week of a year ago, when many, many people in the city of Oakland wanted to buy honey but could not get it. Many restaurants and groceries did not carry honey, and those that did have it on the shelf carried but little so that their supply was soon exhausted. Can you imagine that not a few concerns were at a loss to know where they could purchase honey? What a state of affairs! Several carloads of honey in small package form could have been used to advantage in Oakland alone. What a wonderful thing is advertising! Our product lends itself readily to the advertiser, and the possibilities in this direction are immense. We need but to press the button, as it were, and there would be created a most active demand. The real problem of the future should be that of production.

In order to assist yourself and your industry, it is well to become a member of the California State Beekeepers' Association. This organization is very much alive. L. W. Lasell is the secretary, and the membership dues are one dollar. The Association's place of business is located at 400 Hutchinson Building, Oakland, Calif. M. C. Richter.

Big Sur, Calif.

In Southern California.—The weather the past month has been very encouraging to the beekeepers of southern California in general. It has been colder than usual but no hard winds, and, with the ground thoroly soaked, all plants are getting a good start. A hard freeze on Jan. 12 and 13 did much damage to citrus fruits over most of the country, a loss of 50 per cent being estimated in some places. Corona came thru the freeze the best, perhaps, of any locality in southern California. The probable loss here is from two to possibly ten per cent of the fruit. Corona has only a very limited number of locations for making orange honey, as over 60 per cent of the citrus acreage here is planted to lemons, which are not classed the same as oranges in honey production.

Several carloads of bees have already arrived in southern California from Utah and Idaho points. Also, two cars have been shipped into Riverside County from the Imperial Valley. This same man shipped to the Imperial Valley from Riverside County about 12 years ago. When we think of the inconsistency of some people it is no wonder that we sometimes doubt man's sincerity. It is only a short time since the beekeepers of Imperial County enforced an exclusion ordinance to such an extent that a man who had arrived with a carload of bees was compelled to reload what he had unloaded and reship out of county, to his great inconvenience, to say nothing of the loss. To give and take is the only way. Until we look upon our brother beekeeper as human and entitled to his share of the things God has put here for all of us to enjoy, we will not get from life the real blessings of living.

Much credit is due Cary W. Hartman, President of the California State Beekeepers' Association, for his untiring work in bringing the use of honey before the public. It was greatly thru his efforts that the Governor of California proclaimed Feb. 6-11 as "Honey Week." This should stimulate the industry, as all of the citizens of the state are urged to use the products of the beekeepers during that period.

Many beekeepers are still feeding sugar in considerable quantities. This shows good judgment. A colony that comes thru the winter a little stronger, by the judicious feeding of a few pounds of sugar, will be in condition to store honey or divide for increase weeks ahead of the one that just pulls thru on account of the shortage of stores. Keep a close watch on all colonies, and any that are at all short of stores should be provided for. It is too late now to let any starve out or just exist.

A few of the strongest colonies may show signs of swarming by the last of the month. To lose any of these will be a loss, indeed; for if "A swarm of bees in May is worth a ton of hay," as the old saying goes, what is it worth in March?

Early in the season we often have mornings that stay cool until well into the forenoon. This gives much time to set foundation, wire frames and do odd jobs. But he who is wise will have as much as possible of this kind of work done before the real bee-work begins. L. L. Andrews.

Corona, Calif.

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In Arizona.—The probability suggested in our last report for this department, that a large proportion of the bees in Arizona were entering the winter without adequate stores for the season, has been verified by further reports from beekeepers. The winter, especially the month of January, has been below normal in temperature, at least in southern Arizona. This has doubtless had a tendency to conserve the scanty stores up to the present.

In this month, however, in the southern region (in which are located nearly all of the apiaries of the state) may confidently be expected the beginning of spring, marked by the opening of cottonwood catkins and the blossoming of the sweet-scented leafless mistletoe on mesquite trees. The pollen available from these sources, with possibly some nectar from the mistletoe, together with the rising temperature, stimulates brood-rearing and consequent rapid consumption of stores. It therefore behooves the beekeepers of this region to examine into the condition of their colonies at this time and to feed those requiring it until nectar from outside sources is available.

The winter rains for the months of November, December and January, taken together, have been somewhat below normal, but for January alone slightly above normal at Tucson. It therefore appears probable that conditions may again be favorable for an early spring nectar flow from various wild flowers, sufficient for spring upbuilding, prior to the regular mesquite-catsclaw flow. The rainfall for February and March is, however, the determining factor for this early flow. If this occurs, feeding will be necessary for only a short period. It will be remembered by Arizona apiarists that this early spring flow was very fine in 1920, coming on strongly in March and yielding some surplus in April, but that it failed entirely in 1921. Should this flow develop well, beekeepers will need to be on guard with swarm-prevention measures against uncontrolled increase. Chas. T. Vorhies.

Tucson, Ariz.

In Texas.—The weather in January has been extremely variable and not advantageous to the bees. The first part of the month was very warm and dry. The bees were active every day, and the amount of stores consumed was great. In many cases bees were observed carrying in supplies of pollen and nectar. It was very interesting to see the number of bees engaged in carrying water into the hives at this time of year. It is reported that there has been enough blooming along the Rio Grande to cause a considerable amount of brood-rearing and a nectar flow sufficient to warrant the queen-breeders in starting work. The latter part of the month Texas suffered from a blizzard.

The reports from various parts of the state relative to the honey plants are very contradictory. Observant beekeepers, living but a few miles apart, report very differently. Dry weather during November, December and January has very much decreased the chances for a horsemint honey flow. It seems to be the opinion of the majority of the beekeepers that we must have rain in the next month if we have anything like a normal honey flow. A number of old-time beekeepers, however, predict that we shall have a good honey flow from huajilla and mesquite, as they say that these plants always give a good surplus following a dry winter.

The Texas Honey Producers' Association held its annual meeting on Jan. 17 when the membership was well represented. A policy of retrenchment was agreed upon, and the membership in the American Honey Producers' League was continued. E. G. LeStourgeon, W. O. Victor and Miss Alma M. Hasslbauer were elected to succeed themselves as directors, and T. W. Burleson of Waxahachie was elected to fill the unexpired term of W. C. Collier, resigned. Ambrose Johnson of Laredo was elected president; E. G. LeStourgeon, manager; and Miss Alma M. Hasslbauer, secretary.

There seems to be more activity among the beekeepers than for several years. Many of the large beekeepers, who have made no increase for the past three years on account of the high price of fixtures, are now planning on increasing their number of colonies considerably. Numbers of men who own box hives will transfer this spring because of the lower price of hives. During the past four years, a great deal has been printed relative to beekeeping on the farm, and this publicity is commencing to bear fruit, as during the coming spring there will be many farmers who will install a few colonies of bees. Mr. Reppert, Extension Entomologist, A. & M. College, informs us that the bee interest is becoming very strong in the southeastern portion of the state and that much transfer work will be done this spring.

It has been mentioned several times that honeybees rarely work inside of the cotton blossom in collecting nectar. T. W. Burleson of Waxahachie reports that after the flower has wilted the bees collect a great deal of nectar from the calyx. This bears out the statement I have made a number of times that all of the nectar glands of the cotton plant are situated on the calyx or other vegetative parts of the plant. The nectaries on the inside of the calyx are protected from the bees by the corolla and can be reached only as the flower commences to dry up. This places the cotton in the class with such plants as tobacco, the Jerusalem mustard and a number of other long-tube flowers which become nectar-bearing only after the flower has withered.

This fall many beekeepers reported a large bug was killing many of their bees. An investigation showed that this insect was one variety of the stink bug, sometimes called the wheel bug. These insects are large, gray-colored bugs with long legs and a very long bill. During November and December, in many apiaries, four or five of these individuals would be seen around each hive entrance, and every one of them would have its bill inserted in a honeybee. As this bug is a native, there is little danger of its becoming a pest.

The people of Texas pride themselves upon the inability in any way to predict the weather or condition of crops. Just why this tradition has grown up is very uncertain, as the people who have come into Texas find that predictions on the weather and crops are just as reliable in Texas as in any other state and, in fact, more so. While the predictions may not come true, the beekeeper will never be at a loss if he is prepared for the predicted honey flow. In Texas, where a large per cent of the honey plants are native, there is a greater chance of regular flows than in a country where the honey flows come mostly from imported plants. The beekeeper should ascertain the time of the commencing of his main honey flows and should be ready for the flow at the earliest date upon which he has found the flowers to yield nectar. H. B. Parks.

San Antonio, Tex.

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In Arkansas.—The beekeepers of Arkansas have very much to be thankful for, since we have very little foul brood in the state and have received a fairly good price for our honey for the 1921 crop. Now we have a favorable winter, having had a good snow in the northern part of the state on Jan. 26. Our winter problem is keeping the bees in the hive during the winter months, since the colonies are in single-walled hives. The warm days cause the winter cluster to be broken. I believe we should consider the expense and the advisability of having double-walled hives in order that we may overcome this disadvantage, thereby conserving bee energy. This seesaw in temperature has a tendency to use a greater amount of stores than would be used under an even or continuous cold.

March generally is a spring month with us and we find much to do. First of all, we give each colony a thoro inspection to see if it is well supplied with honey for brood-rearing, since with us this is very important, from the fact that it is too often we have cold, wet weather when the blackberries and huckleberries are in bloom. It may interest some readers to know that we have a certain school of people keeping bees in our state who insist that we should ''rob the bees'' during March or the bees will carry the honey away to make room for the new crop soon to come on.

Next in importance is to see about our queens, so that we may properly care for the queenless colonies. Now that we have a new trouble looming up, we must add to our spring work a close lookout for any foul brood. Unfortunately for us, we have no laws in Arkansas for the protection of our important industry. We must watch for this disease and wipe it out, and at the first opportunity we must interest our senators and representatives to the degree that they will pass some law protecting our interests.

In several back issues of Gleanings I saw articles by Mr. Foster and others pertaining to the importance of some marketing system for our commodity. I believe the time is now opportune to organize producers of honey in these United States—to organize not as producers, but for the commodity, honey, in a marketing association.

Elba, Ark. J. V. Ormond.

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In Alabama.—The beekeepers of the black belt of Alabama and Mississippi are in danger of having their 1923 honey crop ruined by cold weather. All of the white sweet clover seed have sprouted in the warm weather during January, and severe cold at this time would practically destroy the crop. This is our surplus crop, and without it the bees would get scarcely enough honey to exist.

Of course there is a chance for no more severe cold this winter; and yet our worst cold weather is generally in February. We had these same conditions in 1917, which caused a big loss to the beekeepers of the South.

The low price of honey and the poor demand for queens last summer caused the

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bees to be put up with plenty of stores and all young queens. This should give us plenty of young bees for the early package trade.

The demand for honey for the past few months has been very slight, caused principally by the big crop of cane syrup. When the very best syrup can be bought at 50 cents per gallon retail, and honey at four times that figure, there is naturally little demand for honey. Conditions will doubtless be much better in the spring when the syrup begins to get strong. As honey retains its delicious flavor many people will use it regardless of price. J. M. Cutts.

Montgomery, Ala.

* * *

In Mississippi.—The Mississippi & Yazoo Delta Beekeepers' Association met on Jan. 12 in its second annual business meeting. The report of the secretary-treasurer showed that the Association had served a good purpose. Most of the honey crop had been sold. A dealer from a branch house of one of the well-known supply manufacturers announced that, due to the increased business done with his firm last year, he had been authorized to offer a still larger discount to the Association.

The Association passed resolutions urging the Legislature, now in session, to appropriate sufficient funds for the State Plant Board to continue its bee-disease inspection and eradication service. Altho 1921 was the first year of this work, with five men in the field during the summer, American foul brood was reduced over 84% and European foul brood over 62%. The beekeepers in the Delta section (to which section foul brood in Mississippi is confined) not only are anxious to eradicate these diseases that they may make more honey, but they are eager to eradicate them so that they may enter the nucleus and package bee business. Colonies build up strong and swarm in April in the Delta, but no honey flow comes until June. These beekeepers realize that they can sell two or three pounds of bees from each colony in April, the removal of which will stimulate their colonies to increase brood-rearing, which in turn will bring the colonies up to the honey flow in better condition than they would be were no package bees taken. The present State Plant Board regulations prevent a man from shipping bees unless his apiaries are free from foul brood diseases, as far as rigid inspection can ascertain. People buying bees from Mississippi can rest assured that they are not importing any foul brood with their purchase.

Altho the Mississippi & Yazoo Delta Beekeepers' Association is not as yet affiliated with the American Honey Producers' League, they are interested and agreed at the meeting to hold their next meeting at the convenience of the speakers who, we expect, will tour the country this year in the interest of the League and beekeeping in general.

Apiary inspection in seven Delta counties has thrown a revealing light on census figures. According to the last census these seven counties had 1,024 colonies of bees. According to the apiary inspection service there were 2,769 colonies in these counties. Such glaring discrepancies as this should provoke all apicultural interests to such action as would secure for us a fair census report of our industry.

The census figures point out a mere 11% growth in the number of colonies kept in Mississippi during the past decade. These figures, of course, do not point out the enormous growth in commercial beekeeping during this period. In 1910 the queen, nucleus and package bee business was unknown. In 1921 over 35,000 queens were shipped from Mississippi, besides over 10,000 nuclei and pound packages. We are ideally located for the production of early bees that can be rapidly delivered to the East and Middle West. Mississippi expects to ship $125,000 worth of bees in 1922. R. B. Willson.

Agricultural College, Miss.

* * *

In Florida.—The winters in the extreme southern part of Florida and on the Keys are much more trying on the bees, and the winter losses are much greater, on the average, than in the clover belt. This is due to the warm dry winters when every day the temperature is around 80 degrees and there are no nectar-producing plants in bloom. The bees work themselves to death in the fields and there is no brood-rearing, or so little of it that the young bees do not come on in sufficient numbers to take their places. The present winter has been an extremely trying one on account of dry weather. There has been less than an inch of rainfall from the first day of November to the first of February.

A serious winter loss is caused by the disappearance of queens at a time when drones are absent and matings can not be secured. This loss of queens is not confined to the winter months, but is distributed thruout the year. It amounts to about 25 to 30 per cent for the year. Other beekeepers with tropical beekeeping experience, with whom this trouble has been discussed, have experienced the same difficulty, but none have been able to give a satisfactory answer as to the cause. It is not from supersedure, with the young queen lost on her wedding flight, as it is the young and most prolific queens that more commonly disap-

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pear. It is not from swarming, for there are no swarming cells and the bees frequently neglect to start queen-cells until it is too late, so they become hopelessly queenless.

When the queen disappears in the winter the colony is as good as gone. If it is fairly strong in bees, it may be used to help out a weaker colony or the combs can be set over a strong colony to save them from the moths. The bees are seldom without a little brood at all times; but during December and January they attempt to take a rest and are frequently without brood, so that lack of brood and failure to discover the queen are no proofs as to queenlessness; but, if moth larvae are found present also, one may be sure the queen is gone. A hopelessly queenless colony, no matter how populous, quickly succumbs to the moth. The bees seem to lose all "pep" and do not even attempt to fight the moth. The moth larvae and queenless bees will crawl around and over one another without showing the least concern about each other.

Another special winter pest found all over Florida is an ant with the formidable name of *Camponotus abdominalis* var. *floridanus* Buckley. This ant has been quite fully discussed by the late O. O. Poppleton, and his article has been reprinted in the A B C & X Y Z. This ant is both vegetarian and carnivorous. It also loves sweets, and in the summer months it can be found feeding upon the nectar in the bloom, especially on palmetto, and also upon the tender terminal buds of plants. In the late fall and winter months there is nothing they like better than the bees, brood and honey of the hive, and they move in and take possession irrespective of the size of the colony.

If the apiaries are located in comparatively large cleared areas, they are only occasionally bothered by these ants, but when placed in small clearings in the jungle there is only one successful method of combating them. Tanglefoot they will wade thru, corrosive sublimate they enjoy, pans of oil are shortly bridged across by grass or weeds and permit the ants to reach the hives. Ditches around the yards, deep enough to contain standing water, will keep them out, as the ants will not attempt to cross water. In this part of Florida the cost of the moats is not prohibitive, as standing water can be reached at a depth of from one and a half to three feet.

To give the reader an idea of the damage these ants can do, out of 738 colonies in four yards 276 were destroyed in less than two weeks, and almost 100 of these were killed in a single night.

Key Biscayne, Fla. C. E. Bartholomew.

In North Carolina.—January, in North Carolina, marks the height of the quiescent season with bees, there being, however, but few periods of more than a few days at a time when the bees are kept continuously in on account of cold. They were bringing in pollen right up to Christmas week, and in this southeastern section, there will probably be not more than a very few weeks before they will be gathering it rapidly again, especially from mistletoe and others of the earlier flora. In fact, nectar for increased brood-rearing will be getting plentiful by the middle of February.

Information from various sections of the state indicates the continuance of a very satisfactory condition of colonies among the beekeepers generally. Furthermore, the very poor honey yield the past season seems not to have materially discouraged the beekeepers. In every quarter plans are being laid for aggressive work with the bees for the approaching season.

For two weeks very cold weather, with exceptionally heavy snow fall, has stirred the expectation that there will be a late spring, and this would mean less probability of frost to curtail or destroy the early spring flora, as was the case last April. Indeed, the prospect now is for ideal conditions for honey production hereabouts. Beekeepers, generally, were careful to see that their bees went into the winter with ample stores, feeding wherever necessary to make up any deficiencies.

The convention of the North Carolina Beekeepers' Association was held at the State College, Raleigh, Jan. 18-19. Elton Warner, Asheville, was made president; J. E. Eckert, Raleigh, secretary-treasurer. It was in many respects a most profitable convention, with practical talks on various phases of bee culture by President Warner, E. R. Root, C. L. Sams, state bee specialist, T. M. H. Lewis and others.

The Association appointed a special committee, consisting of W. J. Martin, Elton Warner and J. E. Eckert, acting in conjunction with state and federal bee specialists, to work toward the enactment of whatever additional legislation the state may need to assure the control of bee diseases, which are as yet present to a very limited extent in this state. It will be with the 1923 General Assembly, which convenes next January, that the committee will deal especially, undertaking to get together the best and most adaptable features of such laws in other states for application in North Carolina. The best time to beat bee diseases is before they get a foothold.

Wilmington, N. C. W. J. Martin.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Honey for Automobile Radiators. Fall honey in western New York this year is considerably mixed with honeydew, and of course of low quality. We are disposing of most of ours as an anti-freeze for automobile radiators. Honey mixed half and half with water makes a solution which we have never yet known to freeze and will readily circulate in any cooling system. The boiling temperature of honey being 245 degrees and that of water 212 degrees, it makes a solution with an approximate boiling temperature of 228 degrees, or 16 degrees higher than water alone, and as the honey does not evaporate, all that is needed is to add more water from time to time as needed. We are selling this low-grade honey for this purpose at 10c per pound; and, as an ordinary Ford radiator requires about 15 lbs., it costs $1.50 for a Ford, and more or less, as the case may be, for other cars. The men using it here say it is cheaper than wood alcohol, taking into consideration the loss of alcohol by evaporation. Besides this they are at all times sure with honey, while with alcohol they never know if they have enough of it, owing to the evaporation. Honey will not in any way injure either metal or rubber. In fact, it is a rust preventive and after being heated it holds its heat longer than water and makes starting easier in cold weather when the car is left standing for a few hours. James H. Sprout of Lockport, N. Y., was, I think, the first man to use it for this purpose. He has used it continually for at least six winters; and, if beekeepers everywhere will advertise its merits for this purpose, the demand for it will take care of all and more of the cheap grades of honey produced in this country. H. M. Myers.

Ransomville, N. Y.

* * *

Wiring Jumbo Frames. Much is being said of late about the Jumbo frame, and many will be put in use the coming year. I I notice some firms are sending these frames out with end-bars pierced for only four wires, the same as the regular Langstroth. A great many good beekeepers have considered that four wires are scarcely enough for the regular frame, and that many sagged combs are the result even with careful and painstaking beekeepers. It seems to me, knowing these things, that it is folly even to think of getting anything but sagged combs with four wires in a Jumbo depth frame, unless some support is given the foundation other than the four horizontal wires, and I would hate to chance it then.

The past two years I have been using the "one thousand dollar trick" described in Gleanings some time ago and am exceedingly well pleased as well as repaid for using it. I have tried it out under the most trying conditions, by hiving swarms on the foundation with a brood-comb between, also by giving all foundation excepting the outside combs. In examining these combs not a single sagged comb have I found, and they are as nearly perfect as it is possible to get them—something I was never quite sure of when the four horizontal wires were used alone. It is certainly worth trying by any beekeeper who is working for perfect combs, and really it is very little more bother. A sagged Jumbo comb is very little better, if any, than a perfect Langstroth comb; and if the results are obtained that we want and expect from making the change of hives and frames, it will be necessary to take more precaution with the wiring of Jumbo frames than the Langstroth. The diagonal wiring holds the frame perfectly square if the frame is placed in a square form before tightening the diagonal wires—another good feature. I use a small wire staple driven in the groove of the top-bar. I have never had one pull out, and the wire slides easily thru the staple when tightened.

Center Junction, Ia. W. S. Pangburn.

* * *

$168 from Two-Pound Package the First Season. On page 43, January issue, is a record of a two-pound package of bees that produced more than $50.00 worth of honey the first season. This is indeed a good record; but I am in receipt of a letter from C. B. Hamilton of Michigan that a two-pound package shipped him last spring produced 577 finished sections of honey (24 cases), that sold for $7.00 per case, or $168.00.

I believe this to be the greatest amount of comb honey ever produced by a two-pound package in the same season that it was shipped. If anyone has done better, we should like to hear from him.

Montgomery, Ala. J. M. Cutts.

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How to Secure Surplus in Poor Seasons. We have 20 colonies of bees, as much for pleasure as profit. We have bought queens of our leading breeders until we have bees that we are proud of. Our 1921 honey flow was the poorest for several years. We sold about 700 pounds at 20c a pound. I know of only three that got any surplus. Our hives were boiling over with bees just at the right time, which gave us our surplus. I know of one beekeeper having 28 stands who had to buy honey for his own use.

HEADS OF GRAIN FROM DIFFERENT FIELDS

I am over 70, but I have to do something and the bees fill the bill to the dot.

Blackwater, Mo. C. T. Reicker.

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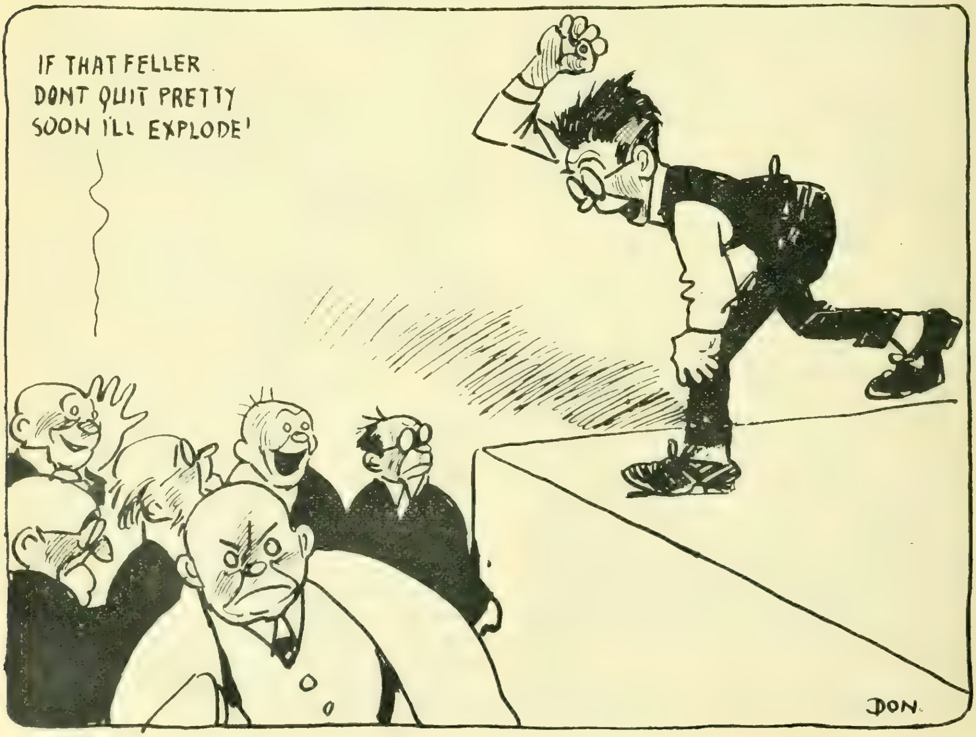
Why Not Omit the Alighting-Board? On page 44 of Gleanings for January, 1921, you quote George J. Griesenauer of Cook County, Ill., regarding the obstruction of the entrance at the alighting-board. Why not dispense with the alighting-board and the trouble along with it? I use the ⅜-inch entrance, closing the ⅞-inch side. A discarded super, or rim, for a a hive-stand furnishes a vertical plane surface from the ground to the entrance and is satisfactory. The bees enter as readily as with the alighting-board. Bees missing the entrance move upward readily without negotiating the under side of an alighting-board. A larger entrance is provided by raising the hive at the front on blocks on the rails of the bottom-board.

Falls Church, Va. A. M. Wheeler, Jr.

Age Brings Wisdom—By Bill Mellvir

(With apologies to Walt Mason.)

When I was young, I'd wind my tongue, then go away and leave it. It worked by steam on any theme tho natives scarce could believe it. I talked on bees in one grand wheeze to Thomas, Dick and Harry. With wisdom great I filled each skate with more than he could carry. I lectured loud to every crowd of beemen I could gather. I thundered forth great thoughts of worth till I was in a lather. Then every year my frame I'd steer straight to our bee convention to sprinkle words on wise old birds, of hives and swarm prevention. I'd criticise wise-looking guys and roast the ancient critters. Then when they'd spring some brand-new thing, I'd roll them flat as fritters. I knew it all; with buoyant gall, the beemen I instructed; I thought they'd make a grand mistake if not by me conducted. I made a hive that ate alive the Langstroth big invention so these queer folks would can their jokes and give me due attention. I wrote enough beekeeping stuff to fill a year of Gleanings, but Mr. Root said, "tho you're cute, your stuff is chaff and screenings." But now I'm old and not so bold, I'm not so sure and cocky. To wisdom's gate the road is straight but also awful rocky. Till now at last I'm learning fast—a beeman in the making. But believe me, boys, you're chiefly noise—it takes a lot of baking.


IF THAT FELLER DONT QUIT PRETTY SOON I'LL EXPLODE!
DON

GLEANED BY ASKING

Geo. S. Demuth

QUESTION.—When the lime-sulphur solution is used on fruit trees for control of San Jose scale, is damage or injury therefrom likely to result to bees located in the orchard from gums or resinous substances they might gather from the trunks of the trees for propolis?
Idaho. Lawrence O. Nichols.

Answer.—So far as known the lime-sulphur solution does not injure bees in any way. It would seem that the chances of bees being seriously injured in the manner you suggest would be very small indeed. So far as known, it is only when poison, such as arsenic in some form, is added to the spray solution that bees are injured. Even then they are seriously injured only when the spray is applied while the trees are in bloom or when the bees are working on the cover crop on which some of the poisoned liquid falls.

BEES DISAPPEAR DURING WINTER.

Question.—In March last year I found all the bees gone from three hives, leaving plenty of stores. What do you suppose was the trouble with them?
North Carolina. T. W. Gentry.

Answer.—These colonies may have been queenless last summer or fall, and having none but old bees they would, of course, die off gradually from old age until none were left. It sometimes happens when bees swarm that the young queen left in the parent colony is lost in her mating flight or fails to become fertile. When this happens the parent colony is hopelessly queenless and will die in the fall or winter if not before, unless the beekeeper supplies them with either a queen or some brood from which to rear one. Sometimes laying queens are lost, and thru some accident the colony fails to requeen itself.

The colonies may have swarmed out because of American foul brood. They often do this if the disease is permitted to run for long, even when they have plenty of honey. You can tell by looking for dead larvae and pupae in the brood-combs, and especially by looking for the dried-down scales on the lower cell wall if the colonies had American foul brood. By examining the combs carefully you can also usually tell if they were queenless the previous summer. Queenless colonies usually fill their brood-combs with pollen; so, if you find the combs heavy with pollen, you may be fairly certain that these colonies were queenless.

BEES LEAVE HIVE AND BECOME CHILLED.

Question.—What causes bees to leave their hives in a frenzied manner, take flight and drop to the ground stiffened from the cold? The bees are well packed, and the thermometer was 25° when they came out. Andrew Stofka.
Ohio.

Answer.—Bees will fly from their hives when it is too cold for safe flight, only when in distress from age or accumulated feces. Old bees often leave the hive on bright days in winter and quickly become chilled in the manner you describe. Since these old bees would otherwise die in the hive a little later their loss is of but little consequence. When bees are wintering on poor stores, such as some kinds of late-gathered fall honey or honeydew, they often become so laden with indigestible matter that they are in great distress and fly out in an effort to relieve themselves of accumulated feces. It sometimes happens that many bees are lost when there is snow on the ground, even when the air is warm enough for safe flight, by falling into the snow and becoming chilled before they can again take wing.

DIFFERENT SIZES OF SECTIONS.

Question.—Why are sections made in three different sizes? W. J. Shafer.
Ohio.

Answer.—Formerly many more different sizes and styles of sections were made than at present. During the period of the development of the standard hives and equipment of today, many beekeepers used odd-sized hives and supers. In many cases these odd-sized supers called for odd-sized sections.

Just why certain sizes have become standard is an interesting story. A. I. Root made his first sections 4¼ x 4¼ inches in order that eight of them would fit inside of a standard-sized Langstroth frame made of ¼-inch stuff but wider than the brood-frames. To make these hold about a pound he made them $1\frac{15}{16}$ inches wide, with top and bottom narrower to admit the bees. Later, when the one-piece section was invented, the openings at the top and bottom were cut out of the wood to form the beeway, as they are made today. When wooden instead of tin separators came into vogue, about 1890, the width of the standard section was reduced to 1⅞ inches to allow $\frac{1}{16}$ inch for the thickness of the separator. This size and style of section are still standard, more of these being used in this country than any other. When the fence separators and plain sections were introduced in 1897 the 4¼ x 4¼ x 1½-inch plain section was made to fit the same supers as the standard beeway section, these plain sections having the same comb thickness and therefore the same capacity as the standard 1⅞-inch section. The 4 x 5 section came into general use largely in connection with the divisible brood-chamber hives which were so vigorously exploited from 1885 to 1900, tho sections taller than wide had long been in use by extensive honey producers in New York to fit the Quinby standing frame hive. The frames in the divisible brood-chamber hives were 5⅜ inches deep, which at once suggested the 5-inch section, thus making the brood-chamber parts and supers alike, except the inside fixtures.

HUBAM AS YIELDER OF NECTAR.

Question.—How many good, strong colonies will an acre of good annual sweet clover (Hubam) supply, giving them all they can do?

California. C. H. L. Sander.

Answer.—The secretion of nectar varies so much under different weather conditions and different types of soil that it is impossible to answer this question definitely. Hubam clover is known to yield nectar freely under favorable conditions, probably about the same as the biennial varieties during the second year. No doubt, it will be found that it yields nectar more freely in some localities than in others. This is true of other plants and is to be expected in the case of Hubam. In order to yield nectar freely, plants must be growing in suitable soil and in a suitable climate. It is well known that each plant has its own peculiar requirements as to soil and climatic conditions. While sweet clover apparently thrives almost anywhere, it does best in soils which contain considerable lime. Probably an acre of Hubam clover would be sufficient for two or three colonies of bees, enabling them to store considerable surplus honey if conditions are favorable.

FEEDING FERMENTED HONEY.

Question.—I have 100 pounds of partly fermented honey. Can I use this in any way to feed the bees in the fall or spring? P. A. Schaeffer.

Pennsylvania.

Answer.—Yes; honey that is slightly fermented can be fed in the spring after the weather is warm enough for the bees to fly freely nearly every day. Such honey should not be fed in the fall in your locality or in any locality where the bees are confined to their hives for long periods during the winter. Fermented honey can be greatly improved by heating it to drive off the alcohol. If American foul brood is in the apiary in which this sour honey was produced, it would not be safe to feed this honey without first boiling it in a closed vessel for about 30 minutes, first diluting the honey by adding about an equal volume of water.

COMB HONEY OR EXTRACTED HONEY.

Question.—I expect to engage in beekeeping, but am undecided as to whether to produce comb honey or extracted honey. Which do you advise?

Connecticut. Lawrence W. Smith.

Answer.—Much depends upon the character of the honey flow and the quality of the honey of your locality as well as upon your market. If you sell your honey locally and can sell extracted honey readily at nearly the same price as comb honey, it will certainly be more profitable to produce extracted honey; but, if you can get twice as much or more for comb honey, it may be more profitable to produce comb honey. But so much more skill is required to secure good yields of comb honey than of extracted honey that, even at double the price, comb honey may not be as profitable as extracted honey, on account of the smaller yield. However, if conditions are just right for comb-honey production, about three-fourths as much comb honey per colony can be secured as extracted honey. There will be more trouble from swarming when producing comb honey. In fact, many beginners not only fail to secure a crop of comb honey because of swarming but also find their colonies weakened and short of stores at the close of the season. This is especially liable to occur when the honey flow is short and comes early in the season. Of course, where the swarming problem is properly handled such loss does not occur. In those locations where the honey is white and does not granulate readily in the sections and where the honey flow is rapid, comb honey will give a larger return per colony at present wholesale prices, provided, of course, the bees are properly managed. In your particular location no doubt extracted honey will yield better returns, especially if you sell it locally.

SHALLOW EXTRACTING SUPERS.

Question.—Which is better for producing extracted honey, the shallow extracting supers or the regular depth? Max Wennenweser.

Texas.

Answer.—Some prefer the shallow extracting supers, but most of the extensive honey producers prefer regular depth supers. Some advantages of the regular supers are: Fewer of them are needed to hold the crop of honey, making the equipment less expensive; there are not so many combs to handle when extracting; and the combs being the same size as those in the brood-chamber, they can be interchanged when this is desirable, thus simplifying the equipment. The shallow extracting supers are lighter and easier to handle, and in locations where the honey flow is slow or where the yield is small their smaller size may be advantageous in tiering up. If the two kinds are equally well filled, 167 shallow extracting supers having frames with ⅜-inch top-bars will hold as much honey as 100 full depth supers having $\frac{1}{8}$-inch top-bars. When purchased in the flat the 167 shallow extracting supers with frames and full sheets of foundation (same weight) cost but little more than 100 full depth supers with frames and foundation, but the labor required to put up a shallow super is nearly equal to that of putting up the full depth supers. In regions where bulk comb honey is produced extensively, as in your state, many beekeepers prefer the shallow extracting super, because it is well adapted to the production of bulk comb honey as well as extracted honey.

TALKS TO BEGINNERS

Geo. S. Demuth

Beginners who have not yet secured their bees should read carefully the "Talks" in the February issue concerning the various ways of obtaining a start in bees and the things to look for in judging the value of colonies that are for sale.

In the extreme South beginners should have their colonies now. In the middle latitudes the bees should be secured before April 1, and in the far North it is well to do this before May 1. Of course, bees can be purchased and moved home any time during the spring or summer; but it is better to have possession of the colonies some time before the main honey flow (see Talks in last issue) if possible, for there is much that can be learned in handling the bees early in the spring, and proper care of the bees during the month or six weeks just preceding the honey flow is extremely important. Whether north or south the bees can be brought home at any time now. Even in the North, colonies that are in good condition now are fairly safe, so far as the winter is concerned.

To move the bees home, close the hive entrance with a piece of wire screen, so no bees can get out; and fasten the hive parts (body, cover and bottom) together by nailing on pieces of lath. The entrance should be closed when the bees are not flying either on a cool day or in the evening, so no bees will be lost, and as soon as the hive is placed in its new location the entrance should be opened.

Where to Locate the Bees.

The hives should be placed in a sheltered nook where they will not be exposed to cold winds, but they should not be in a dense shade. They should be where the sun can shine on them during most of the day, especially during the spring. If convenient, it is desirable to have the entrance of the hive toward the east, southeast or south, tho, if well protected from cold winds, this is not essential. If on sloping ground it is better to place the hives on a southern or southeastern slope if possible.

The hives should be placed upon four bricks, on blocks of wood or on a regular hive-stand made by nailing together four boards three to six inches wide, to make a rim about the size of the bottom of the hive, the four pieces standing on edge. The hive should be level from side to side, but should be about an inch higher at the back than in front.

If on a village or city lot, the bees should be located well away from the walk, preferably near a high board fence or hedge, so that the bees will go upward before flying across neighboring lots, preventing annoyance to neighbors. Where there is no suitable place in the back yard, the bees can be located in the attic of the dwelling or even on the roof, if necessary. If in the attic a few auger holes will provide an entrance.

Starting With Package Bees or Nuclei.

In the North, those who expect to purchase bees in packages or nuclei from the South (see Talks in last issue), instead of established colonies, should order these now to be delivered in April, or if in the far North the first of May may be early enough. The three-pound packages usually give best results in surplus honey, tho the two-pound packages often yield as much, or more in proportion, as the larger ones. A queen must be ordered with each package, for she alone must lay the eggs that provide young bees to build two or three pounds of worker bees up to a strong colony before the main honey flow.

Since beginners usually do not have empty combs or combs containing honey and pollen (sometimes called beebread), it is sometimes much better to purchase two or three frame nuclei (very small colonies with combs), each with a queen, instead of package bees without combs, for this gives the bees the advantage of having at least two or three combs already built to start housekeeping when they arrive. Many young bees in these combs should be ready to emerge, and these little colonies begin to increase in strength at once. The greatest objection to shipping nuclei is the danger of carrying the brood diseases of bees in this way, if the shipper is careless. When bees are shipped without combs this danger is practically eliminated.

What Kind of Hives Should Beginners Use?

Those who expect to purchase either package bees or nuclei should provide the hives and equipment well in advance, so that there will be time to put the hives together and get them ready for the bees when they arrive. A careful study of a catalog of beekeepers' supplies will greatly aid those who have not seen modern beehives to understand their construction and their various parts. Beginners are usually confused as to what style and size of hives to select. In the catalogs several different sizes, as well as different styles of hives, are listed to suit the needs or notions of different beekeepers. The size used by most of the extensive honey producers is the standard hive having 10 frames for the 10 separate combs. These frames are 17⅝ by 9⅛ inches outside measure. Some beekeepers, especially extracted honey producers, prefer the Jumbo hive, which is the same size as the standard hive except in depth, being 2¼ inches deeper. Formerly the standard-depth hive made to hold eight frames was quite popular in this country, and many extensive honey producers still use this size. While the expert can produce just as much honey using 8-frame hives as if using larger ones, the beginner will do well to select the larger hive, since a single 8-frame brood-chamber is not large enough for the development of full-strength colonies in the spring, and too often such small hives do not contain enough honey for winter and spring for safety. Those who desire to use a size other than the standard 10-frame hive will find it safer to use a larger rather than a smaller one. Beginners who are undecided as to which size is best suited to their locality can safely select the standard 10-frame hive, this being the size most universally used.

Where the winters are not too severe the double-walled hives with built-in packing are desirable, especially for beginners who do not expect to move their colonies often, as many extensive honey producers do. In the extreme South and in California where extra protection is not necessary in winter, as well as in the far North where the bees are wintered in the cellar or packed in large winter packing cases outside, most beekeepers prefer the single-walled hive, tho a few who winter their bees in cellars use double-walled hives on account of their better protection during cool weather after the bees are set out in the spring. Those who are undecided as to which style of hive will best suit their needs will not go far wrong by selecting the single-walled hive, preferably with the metal cover; but in most parts of the country these hives must be given extra protection either by packing them in a winter case or by placing them in a good cellar for winter. Whatever hive is selected, a full sheet of foundation should be included for each of the frames.

What Kind of Supers for Beginners?

Supers are separate chambers designed for the storage of surplus honey, which the beekeeper takes from the bees. They are placed on top of the brood-chamber or hive proper, and are so constructed that any required number of them can be tiered up on top of the brood-chamber.

Supers are made for either comb honey or extracted honey. Comb honey is usually produced in sections (small wooden boxes), but for home use and in some localities in the South for market, comb honey is produced in frames holding when filled several pounds. When comb honey is produced in sections the box is sold with the honey, but when produced in larger frames the comb honey is cut out in chunks. This is called bulk comb honey, or chunk honey.

Honey that is to be extracted is usually produced in frames of the same size as those in the brood-chamber, the honey when finished being thrown out of the combs by means of the honey-extractor. The combs are not injured in the process of extracting, and they are given back to the bees to be refilled, so in producing extracted honey the combs to hold the surplus honey need to be built but once.

Most beginners produce comb honey at first to avoid purchasing an extractor the first season, tho comb-honey production is more difficult than extracted-honey production on account of more trouble from swarming and greater difficulty in inducing the bees to work in the comb-honey supers as readily and as vigorously as they do in extracting-supers. Uutil considerable skill in comb-honey production has been acquired, the yield of extracted honey is usually nearly double that of comb honey. In many cases where the honey is sold locally, extracted honey can be sold at the same price as comb honey. Wherever this can be done, of course, an extractor will soon pay for itself. On the other hand, the present wholesale price of comb honey is more than double the wholesale priec of extracted honey, and in some cases it is more profitable to produce comb honey. Comb-honey production is more fascinating to most beginners, and being more difficult the beginner usually learns faster when producing comb honey.

The style of super used most extensively by comb-honey producers is the one designed for the 4¼ x 4¼ x 1⅞ beeway sections. The style of extracting-super used most extensively is the regular standard hive-body 9$\frac{9}{16}$ inches deep, which is made exactly like the standard brood-chamber, tho some prefer the shallow extracting-supers. The style of super best suited for the production of bulk comb honey is the shallow extracting-super. To hold the crop of honey, from two to four comb-honey supers will be needed by all good colonies if the season is at all favorable, or from one to three full-depth extracting-supers if extracted honey is to be produced. In some seasons double this number of supers are needed.

Full sheets of foundation should be used in all the sections and all extracting frames. Medium brood foundation is usually the best weight for both the brood-frames and the extracting frames, and thin super foundation is usually the best weight to use for comb-honey supers.

If comb honey is to be produced, about one additional hive will be needed for every two colonies in the spring for swarms, if the season is favorable for swarming. If extracted honey is to be produced, these extra hives are not necessary unless increase is desired.

In addition to hives and supers and their inside furniture, the beginner will need a

(Continued on page 177.)

JUST NEWS

Editors

THE annual meeting of the stockholders of the Colorado Honey Producers' Association will be held at the Auditorium Hotel, Denver, March 6 and 7, 1922, for the election of officers and other business.

* * *

The American League Meeting.

Fifty-six delegates and members attended the third annual meeting of the American Honey Producers' League at Salt Lake City on Jan. 30-31.

The report of the secretary-treasurer showing the following financial statement of the League was filed.

GENERAL FUND.

RECEIPTS.

Balance on hand, Sec'y Chas. B. Justice	$ 48.16
Balance on hand from 1920	466.90
Receipts from state organizations since 1921:	
Nebraska State Beekeepers' Assn	100.00
Colorado Honey Producers' Assn	325.00
Washington State Beekeepers' Assn	100.00
Kansas State Beekeepers' Assn	100.00
Texas Honey Producers' Assn	791.00
Texas State Beekeepers' Assn	50.00
Montana State Beekeepers' Assn	72.00
Wisconsin Beekeepers' Assn	91.00
Iowa Beekeepers' Assn	100.00
New York Beekeepers' Assn	18.00
Oregon Beekeepers' Assn	100.00
Illinois Beekeepers' Assn	100.00
Receipts from Allied Trades:	
G. B. Lewis Co	200.00
A. I. Root Co	200.00
Dadant & Sons	200.00
Leahy Mfg. Co	60.00
Falconer Mfg. Co	50.00
Illinois Glass Co	25.00
National Can Co	25.00
W. W. Boyer & Co	25.00
Hamilton & Menderson	25.00
Virginia Can Co	25.00
A. G. Woodman Co	10.00
Marshfield Mfg. Co	10.00
Receipts from individuals:	
B. F. Smith, Jr	20.00
E. B. Ault	20.00
H. E. Weisner	10.00
Wm. Glatter	10.00
L. D. Leonard	10.00
Mrs. Mary G. Alley	10.00
J. M. Davis	5.00
Bruce Anderson	2.00
Will M. Kellogg	1.50
W. E. Woodruff	1.00
W. P. Southworth	1.00
Receipts—Miscellaneous:	
Sale of Warning Posters	24.07
Total Feb. 1, 1921, to Jan. 31, 1922	$3431.63

DISBURSEMENTS.

Stenographer hire	$ 828.33
Postage	178.00
Printing, bulletins, stationery	372.70
Freight	4.12
P. O. box rent	9.00
Miscellaneous, telegrams, etc	3.50
Total	$1395.97
Balance in General Fund	$2035.66

The advertising campaign was heartily endorsed. See the advertising financial report printed below. An appeal is to be made to supply-manufacturers, dealers, honey-bottlers and the manufacturers of containers to renew their advertising pledges of last year, and beekeepers everywhere are to be solicited to send in at least one cent for every colony owned as a contribution to the advertising cause. The committee of legislation presented a draft of a bill designed to harmonize the various laws on the interstate shipping of honey. The possible importation of Isle of Wight disease was discussed, and Dr. E. F. Phillips was empowered to appoint a special committee with power to act for the League. Other bureaus of the League making reports of progress in their work were: Legal Aid, O. L. Hershiser, chairman; Arbitration, H. B. Parks; Educational, Dr. J. H. Merrill; Research, Dr. E. F. Phillips; Tree Planting, H. L. McMurry; and the committee on Meeting Schedules, B. F. Kindig.

The president, E. G. LeStourgeon, having served for two years, asked to be released and a successor be elected. The term of office of B. F. Kindig, vice-president, and F. B. Paddock of the Executive Committee having expired, a ballot was ordered to be taken by mail among the League membership to choose these three officers. Both these ballots have been mailed and the result will be announced as soon as known.

ADVERTISING FUND.

RECEIPTS.

Receipts from organizations:	
Michigan State Beekeepers' Assn	$ 192.72
Wisconsin State Beekeepers' Assn	100.00
Texas Honey Producers' Assn	350.00
Utah State Beekeepers' Assn	300.00
Receipts from Allied Trades:	
A. I. Root Co	1000.00
F. W. Muth Co	500.00
C. H. W. Weber	500.00
G. B. Lewis Co	400.00
Dadant & Sons	300.00
Falconer Mfg. Co	200.00
Foster Honey & Merc. Co	100.00
Hazel Atlas Glass Co	100.00
W. W. Boyer & Co	100.00
Leahy Mfg. Co	100 00
Miller Box Co	100.00
U. S. Can Co	50.00
Receipts from individuals:	
F. J. Rettig	100.00
J. J. Wilder	50.00
S. F. Lawrence	10.00
Ernest Kohn	10.00
Colin P. Campbell	5.00
W. W. Foster	5.00
John Kneser	.36
Receipts from sale of booklets	31.00
Total receipts	$4604.08

DISBURSEMENTS.

Paid to Proctor & Collier Co	$4166.77
Freight on booklets	25.85
Expressage on advertising matter	21.54
Standard Printing Co	8.00
Magazines distributed	5.00
Postage on booklets	147.47
Total	$4374.63
Balance cash on hand	$ 229.45

FINANCIAL CONDITION OF ADVERTISING FUND.

Cash on hand	$ 229.45
Unpaid pledges	607.28
Liabilities—Due to Proctor & Collier Co	684.77

OUR HOMES

A. I. ROOT

We know that all things work together for good to them that love God.—Romans 8:28.

And it shall come to pass that, before they call, I will answer; and while they are yet speaking, I will hear.—Isa. 65:24.

The path of the just is as the shining light that shineth more and more unto the perfect day.—Prov. 4:18.

IN our last issue I had something to say about the tobacco habit; and, good friends, I now find I have something more to say. By the way, I have given you instances of *nearby* answers to prayer. I have in mind at least three more to mention, and these three might be called "long-range" answers. When I first began to investigate bee culture there was very early mention of driving bees or hiving them with smoke. I think one of the first plans was the use of smoke from a cigar; and as at least a *few* people did not use tobacco they suggested rotten wood; and our good friend Dr. Miller, when he made that first visit here, suggested that a small saucepan would be an excellent thing to hold the smoking wood or punk. By blowing across the top of the saucepan he could quiet the bees very nicely without any ashes dropping on the combs. A few days after he left, however, I burned up a colony of bees by being careless with that same saucepan. In order to keep the grass and weeds down I had a good coating of sawdust put around the entrances of the hives. This made the apiary look very neat and tidy. But others, as well as myself, had trouble from the sawdust getting on fire. Later on somebody suggested a smoker made of a tin tube. You were to blow in at one end, and the smoke would come out at the other. If I remember correctly, Doolittle described and devised such a smoker; and then somebody (I do not know but it was Moses Quinby) suggested a little hand bellows to blow the smoke in order to avoid getting out of breath when one happened to have some bad hybrids. Grace Allen suggested that Quinby gave us the first bellows smoker, and I think she is right about it. But it was a small affair.

About this time T. F. Bingham of Michigan and myself each invented what we considered to be an improved form of bellows smoker. Bingham had his patented. Let me now digress a little:

I went to visit some beekeeping friends in Chatham, near Medina. Several young boys were with us out in the apiary; and some one of the crowd had a lighted cigar, and showed us how quickly the bees could be quieted with *tobacco* smoke. Thereupon one of the boys remarked that he was going to learn to smoke, in order to handle his bees in the way we had just witnessed. Then I spoke up and said:

"No, no, my young friend. Do not learn to smoke tobacco. I have just invented a good bellows bee-smoker. The price is fifty cents; and I will make you a present of one of these new smokers, provided that if you at any time in the future use tobacco in any form you are to pay me the fifty cents."

This caused some merriment. Then another boy spoke up and said, "Mr. Root, can I have one on the same terms?" Then still another asked, "And can I have one, too?" To both of whom I replied, "Yes, I will give any one of you a smoker on the same terms. But your names will have to be printed in our bee journal, so that everybody who knows you may keep you in mind of your tobacco pledge."

The matter was written up and printed in Gleanings as to how the tobacco pledge got started. But little did I know what was to be the outcome. See our first text at the head of this talk. You may be sure the mothers and sisters, wherever Gleanings went, took hold of this, and I hope that many of the fathers did. We were kept quite busy making smokers and giving them away. At just this time, however, Mr. Bingham informed me that my new smoker was an infringement on his patent. I told him that my invention was made prior to his. In order to settle the matter in a friendly way, Mr. Bingham paid us a visit; but the more we talked, the more it seemed plain that the matter would have to be settled in the courts. While we were discussing the matter I said:

"Mr. Bingham, tonight is our regular teachers' meeting for the study of our Sunday school lesson, and I seldom miss the teachers' meeting; so I hope you will kindly excuse me."

Let me now explain that, altho Mr. Bingham was a very bright and good man, I am sorry to say that he stood a good deal with James Heddon, who was to some extent a follower of Bob Ingersoll and Tom Paine. With this in mind, imagine my surprise when he replied, "Why, Mr. Root, I should like to attend your teachers' meeting myself. Why can't I go along with you?"

Of course, I told him that I should be very glad to have him go with me. At the close of the meeting our pastor asked me to make the closing prayer. Please remember that I was then a comparatively new convert. I do not think that I ever prayed before in public—at least not in such a gathering. Satan suggested that Mr. Bingham might use my humble prayer as an occasion to cast ridicule on the followers of our Lord and Savior. On the way home he said something like this:

"Mr. Root, I want to get off bright and early in the morning. Can we not settle this matter of the smoker before we go to bed? I shall sleep a little better if we can settle it in a friendly way."

On the impulse of the moment, or *maybe* it was at the suggestion of the dear Savior, I said:

"Friend Bingham, I believe you are honest in thinking that my smoker is an infringement on your invention; but whether you are right or wrong, rather than go to the expense of settling it by law I will give way. I will stop making the smoker."

He was evidently surprised, and said:

"Why, Mr. Root, this is unexpected. Of course I will pay you something for giving me the right of way in the smoker business."

I told him I did not want anything—in fact, I preferred not to take a cent. Then we dropped the matter with the understanding that I would, at least for the present, buy smokers from him.

Now, friends, you may think me stupid; and, in fact, if it had not been that the Lord Jesus Christ has taken care of my stupidity, it would have made me lots of trouble in times past. When I reached home I told Mrs. Root about it, and she said:

"Why, my dear husband, I am afraid you have done something that you will repent of. This giving smokers away by the hundreds to those who stop using tobacco—what are you going to do about it? Are you going to buy them of Mr. Bingham at something like a dollar apiece to give away?"

Now, here comes in the stupidity. When I agreed to give up making that little fifty-cent smoker I actually *forgot* the matter of giving them to the boys if they would not learn to smoke. Then I had to own up to the dear wife that I did it without considering what would happen. Then she replied:

"Well, what are you going to do in *this muddle?*"

"My dear wife, we are going to kneel down and ask the dear Lord to help us out of this trouble just as he has helped us out of other troubles in the past."

And now, dear friends, here comes in the "long-range" answer to prayer. The next morning, when I went down to the factory I found on my desk a queer-looking package that had come in the mail after I left the office the night before. It was a bellows smoker made on an entirely new principle, and it came from away off in the mountains of California, with a letter reading something as follows:

"Mr. Root, I have invented a bee-smoker on a different principle, and I think it is better than anything else the world has yet had. I was going to get it patented but after thinking it over I told my wife I would rather have the fun of surprising our friend A. I. Root than to get quite a sum of money out of it when patented, and here is the smoker. I know from your habits that you will enjoy giving it to the world."

I took a look at it, and then marched to the tinshop that had just been started in our new brick building, and showed it to the tinners. To our surprise we found we had all the machinery necessary to make them at much less expense than those we had been making; and before night we had a dozen or two ready to go out. More than a thousand were given away to those who took the tobacco pledge; and all along the years since this incident kind letters have come from those who broke off from the habit years ago thru the influence of that little smoker. The man who sent me the "cold blast smoker" was our old friend, J. G. Corey of California, and it was my pleasure to pay him a visit years after; and in one of these visits I wandered away off to Puget Sound, and stopped there with an old friend, H. A. March. Over the mantelpiece was a bright new tin smoker that evidently had never been used. When I asked what it meant, friend March set it down opposite me and held up his hand, saying:

"Mr. Root, can you hold your hand any stiller than I hold mine?"

I replied, "No, friend March, I am sure I can not, for your hand is as steady as if it were made of cast iron."

Then he explained to me that some time before, maybe two or three years, he was run down, broken up, and nervous. His hand shook so that he began to think he would have to stop writing letters. He consulted the doctors, but they could not give him any help. After suffering for months he saw my offer of a smoker to any reader of Gleanings who would give up the use of tobacco. He said: "Now, I can not begin to tell you what a job it was; and to help me fight it out I put that smoker up there where I could see it, and it has helped me, nobody knows how many times, to hold fast to my pledge. My experience was like your father's. In just a few weeks I began to have better digestion and better health than I had known for years."

This is a sample of the letters I received, and now here is something more:

Of course the above was written up, and, as I told you, hundreds of smokers were given away. But just one year from the day we began making the cold-blast smoker we had had cash sales of over *20,000.* Just one thing more:

One of the great dailies published a little item something like this:

"Down at Medina, Ohio, there is a queer chap in the bee business, and he thinks it is wicked to smoke pipes and cigars; and to encourage the young beekeepers, he offers to give to any one of his readers a bee-smoker free of charge if said beekeeper will sign a pledge, printed in his bee journal, to use no more tobacco.''

This item was put in as a joke, but it helped the sale of 20,000 smokers. After I had written the above up in our journal I gave it as a swift answer to prayer; but somebody suggested, ''Why, Mr. Root, you are making a big mistake. Your good friend Corey mailed that smoker, by your own statement, before you uttered that rash promise to Mr. Bingham.''

But, dear friends, I had been reading my Bible pretty thoroly from beginning to end, and I was thus enabled to point my critic to our first text—''Before they call I will answer.'' With the great Father above there is no past, present, nor future, and he is able to set the vast machinery of the universe in motion so as to answer the prayers of a poor humble follower like myself when he gets into trouble or thinks he has.

''WIND ELECTRICITY.''

Making the Cold North Wind Warm up Homes in Denmark, Holland, and Germany.

Learning from the "Our Homes" Department that Mr. A. I. Root is very much interested in the development of electricity by wind power, I copy a couple of short news items from *"Concrete,"* a monthly magazine published in Detroit, feeling sure that Mr. Root will be glad to read it.

ELECTRIC POWER FROM WINDMILLS.

Denmark is building windmills to produce electric power, owing to the high cost of fuel. At the Oersted Congress in Copenhagen, in 1920, Professor Dr. Phil Erik Schou read a paper on "The Modern Basis for the Construction of Windmills," published in *Ingenioren*, April 16, 1921.

Owing to the scarcity of coal and fuel oil, an engineer, R. Johannes Jensen, was engaged to construct electric generators capable of transforming the cycle and voltage. The construction was successful, and seven windmills have been completed, transforming the energy of wind to commercial electrical power. The windmills have a concrete structure, with a superstructure of structural steel supporting the wings.

The calculations of the windmills were according to the "Drzewinski" theory, founded upon Professor La Cour's Methods.—*"Concrete,"* July, 1921.

WIND REPLACING COAL.

In our last number we mentioned the Danish wind power—electric power stations—and now find that Holland and Germany also eagerly try to benefit by this nature's auxiliary to coal. Denmark, Holland, and Germany already have more than 500 power stations utilizing wind power as a main or auxiliary motor. The last issue of *Current Opinion* states that the Perkins Corporation in conjunction with the Westinghouse Electric Co., has erected in Indiana the first perfected outfit in the United States for generating electricity from the air in violent motion. A 50-foot steel tower, topped by a large windwheel, a generator, a switchboard, and a battery are included in the operation.

This method of generating electricity is expected to bring in a new era to a farm power and light field, putting electricity within reach of many who live where it is not now to be had.—*"Concrete,"* August, 1921.

Geo. J. Griesenauer.

5006 Catalpa Ave., Chicago, Ill., Sept. 29, 1921.

It would seem from the last quotation that the manager of *Concrete* has no knowledge of the work that has been done for years by the Wind Electric Corporation of Wyndmere, N. D., now located at Minneapolis, Minn. And while we are discussing this subject, below is a clipping from the *Christian Herald* indicating the rapid development of electric energy in the United States:

> Between 1910 and 1920 the population of the United States increased less than 15 per cent, while the number of customers of electric light and power companies increased over 250 per cent, and the amount of electrical energy sold increased over 350 per cent.

Wind Electricity in 1922.

On page 170, Gleanings for March, 1921, I suggested some other power was rather needed when the wind didn't happen to blow, especially if one wanted the wind to furnish current for running an electric auto, besides lighting the premises. At that date I didn't know of any such outfit, to be used only in an emergency. For two winters we got along very well, by using the auto, for about 5 or 6 miles a day; but the third winter there were several times when a little more ''juice'' would have been a help. This present winter (the fourth) since the ''tropical hurricane (see Gleanings for December, page 780), Nature to make amends has given a winter up to present time, Jan. 9, sometimes a whole week with almost no wind at all.

Our readers, of course, know of the recent reduced prices on farm lighting outfits. I recently paid Sears, Roebuck & Co. $185 for a combined engine and generator, and when the wind doesn't blow, we use this. We get gulf kerosene here at only 14c when we buy 50 gallons at a time, and so far it stores all our batteries beautifully. As near as I have been able to figure, a gallon of kerosene will store the auto batteries sufficient to run, with one passenger, 15 or 20 miles. Call it only 14 miles, and we have only 1 cent a mile for fuel for an electric auto. Now the windmill costs nothing for fuel, but the long rubber belt costs about $16.00 and runs on an average two years. If we run the auto 1000 miles each winter and light the premises, it will cost as much more; so we have $20.00 for kerosene against $16.00 for belt. But we must remember the windmill is much more expensive than the generator I have mentioned which cost $185. On the other side, we must take into account the many *more* and much *stronger* winds in the Dakotas and other adjoining states. Now while I like the little cheap engine very much, at the same time I enjoy seeing the two windmills when there is a fair wind, in the saving of kerosene, blowing not only ''shillings,'' but *dollars* right into my pocket while I sleep. I have felt it no more than fair I should give you the above because I have in the past been so enthusiastic in regard to "wind electricity." The low price of the modern generators, together with the low price of kerosene itself, is what changes the situation.

We must credit the windmill with the fact, that owing to the slow revolution of the wind wheel (only 25 a minute) it will almost never wear out. While the kerosene engine, so I am told, is good for only four or five years, the windmill ought to last a lifetime. The wooden tower, however, will need painting about as often as a dwelling house. A painter is just now painting my first wood tower, that had two coats of paint when first put up four years ago. The expense of storage batteries and electric generator will be practically the same, as both will be required for either wind or kerosene.

Later: Today (Jan. 12) we are having the second day of a strong north wind that has stored all our batteries, and the two windmills are among "the great army of unemployed," pulled out of the wind. Our barometer told us it was coming, so I didn't waste much kerosene. I mention this, to show that Florida, as a rule, can give us "wind electricity."

Talks to Beginners.—Continued from page 172.

good smoker, a bee-veil and perhaps a pair of bee-gloves to protect his hands and wrists from stings.

How Many Colonies the First Season.

Most beginners are satisfied with one or two colonies for the first season. Much can be learned from a single colony, but there are some advantages in having at least two or three colonies to begin with. The ambitious beginner need not hesitate to undertake the handling of a dozen or more colonies the first season.

Importance of Abundant Stores.

One of the first things for a beginner to learn is the necessity of having the bees well supplied with food at all times. Bees do not waste food when they have more than they need, but store it away in the combs until needed. During the spring a vast army of workers must be reared, if the colony is to be strong enough to gather surplus honey. The rearing of these young bees requires much more honey than the bees are usually able to gather during the spring; so, if the colonies were not amply supplied with honey last fall, it will be necessary to feed them in the spring unless they are able to gather more than usual from early flowers. It is well to see that every colony has at least 10 to 15 pounds of honey in the hive thruout the spring. Bees can be fed even in the North this month, if necessary, by laying a slab of hard candy made of granulated sugar on top of the frames against the cluster of bees; or sugar syrup, made by heating two parts of sugar and one of water, can be fed in an ordinary friction-top pail having small holes punched in the cover, the pail of syrup being inverted just above the cluster. Such a feeder should be placed in an upper story of the hive and the space around it filled with old grain bags or old clothes.

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D. E. Collier, Ramer, Ala.; L. C. Mayeux, Hamburg, La.

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REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

Van Wyngarden Bros., R. C. Wittman, W. X. Johnson, F. W. Luebeck, F. W. Summerfield, C. S. Engle, J. Tom White, C. A. Mayeux, Dingee & Conard, Woodlawn Nurseries, Heller Bros., C. C. Brinton, W. H. Laws, Elton Warner, Aluminum Honeycomb Co., M. Voinche.

HONEY AND WAX FOR SALE

FOR SALE—Buckwheat honey in 5-lb., 10-lb., or 60-lb. cans. H. B. Gable, Romulus, N. Y.

FOR SALE—Light amber honey in new 60-lb. cans. J. N. Harris, St. Louis, Mich.

FOR SALE—White clover and aster honey in 60-lb. cans and ten-pound pails. John S. Field, Brooksville, Ky.

FOR SALE—Clover, amber and buckwheat honey, 60-lb. cans and 5 and 10-lb. pails. C. J. Baldridge, Kendaia, N. Y.

FOR SALE—Choice clover honey, 15c; buckwheat, 10c per pound. Two 60-lb. cans to case, f. o. b. here. Wm. Vollmer, Akron, N. Y.

FOR SALE—Buckwheat honey in 60-lb. cans, one can to case, liquefied, $6; 2 cans to case, granulated, $10.80. John J. Lewis, Lyons, N. Y.

FOR SALE—Buckwheat honey in second-hand cases, 120 lbs., $9.60 each. Sample 10c. R. V. Cox, Sloansville, N. Y.

FOR SALE—A few dozen 10-lb. pails of clover extracted honey. Will sell cheap to close out. State quantity wanted. J. D. Beals, Oto, Iowa.

FOR SALE—6000 lbs. choice white alfalfa sweet clover honey in cases of 5 and 10 lb. pails, $7.50 per case, f. o. b. Montrose, Colorado. H. R. Fisher.

FOR SALE—20 cases white comb honey, light weight, stamped NOT UNDER 10 ounce, $4.00 per case, 24 sections to case. H. G. Quirin, Bellevue, Ohio.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gal. barrels. Samples and price on request. A. I. Root Co., 23 Leonard St., New York City.

FOR SALE—Extra-choice extracted white clover honey, put up in new 60-lb. cans and 5-lb. pails. Sample 20c, same to apply on first order. David Running, Filion, Mich.

FOR SALE—Clover, basswood or buckwheat honey, comb and extracted, by the case, ton, or carload. Let me supply your wants with this fine N. Y. State honey. C. B. Howard, Geneva, N. Y.

FOR SALE—Extracted honey, clover, 15c per pound; amber, 10c; two 60-lb. cans to case; amber in barrels, 8c; in five-case or five-barrel lots, 5% off; in ten-case or ten-barrel lots, 10% off. H. G. Quirin, Bellevue, Ohio.

FOR SALE—12,000 lbs. of choice white clover honey, well ripened, put up in new 5 and 10 lb. pails. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—Finest white clover and basswood honey in 60-lb. cans and 5 and 10 lb. pails. Sample 15c. Write for prices. A. S. Tedman, Weston, Mich.

HONEY FOR SALE—In 60-lb. tins, water-white orange, 15c; white sage, 13c; extra L. A. sage, 11c; N. Y. State buckwheat, 10c, for immediate shipment from New York. Hoffman & Hauck, Inc., Woodhaven, N. Y.

RASPBERRY honey, blended with willow-herb, put up in 60-lb. cans. In order to close out quickly will sell for 12c a lb. We have some raspberry mixed with a small quantity of goldenrod for 10c a lb. Sample of either kind, 20c, which may be deducted from order for honey. Elmer Hutchinson & Son, Lake City, R. D. No. 2, Mich.

HONEY AND WAX WANTED.

WANTED—Honey, section, bulk comb and extracted. Elton Warner, Asheville, N. C.

BEESWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

WANTED—Beeswax. We are paying 1c and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address, so we can identify it immediately upon arrival, and make prompt remittance. The A. I. Root Co., Medina, Ohio.

FOR SALE.

ROOT'S GOODS AT ROOT'S PRICES. A. W. Yates, Hartford, Conn.

HONEY LABELS—New designs. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE—A full line of Root's goods at Root's prices. A. L. Healy. Mayaguez, Porto Rico.

YOU will make no mistake in ordering your comb foundation of E. S. Robinson, Mayville, N. Y.

SEE my large display advertisement on page 191. Jes Dalton, Bordelonville, La.

FOR SALE—Small comb-extracted outfit. Good condition. No foul brood. N. W. Hosley, Arkport, N. Y.

FOR SALE—Ten-frame hive-bodies in flat, also white clover extracted honey. C. H. Hodgkin, Rochester, Ohio.

FOR SALE — 'SUPERIOR FOUNDATION, "quality unexcelled." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

ROOT'S BEE SUPPLIES—For the Central Southwest beekeepers. Beeswax wanted. Free catalog. Stiles Bee Supply Co., Stillwater, Okla.

FOR SALE—300 P fences for 4¼ x 4¼ plain sections, new but few slightly discolored by air, $12.00. King's Apiaries, McArthur, Ohio.

PORTER BEE-ESCAPES save honey, time, and money. Great labor-savers. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

FOR SALE—All of my bees and fixtures. Ask for full particulars. Reason for selling, ill health. L. E. Evans, Onsted, Mich.

FOR SALE—10-frame standard beehives with metal covers, $2.50 each. Hive-bodies, 90c without frames. Thos. Cordner, Sparta, Wisc.

FOR SALE—300 good brood-combs, 100 imperfect combs suitable for extracting only. 30 empty L. depth supers. No disease. Bargains. Porter C. Ward, Allensville, Ky.

FOR SALE—Good second-hand 60-lb. cans, two cans to a case, boxed, at 60c per case f. o. b., Cincinnati. Terms cash. C. H. W. Weber & Co., 2163 Central Ave., Cincinnati, Ohio.

FOR SALE—Jumbo and Standard hives with bees; also good 10-frame hives, metal roofs and reversible bottoms, with or without drawn combs. No disease. Horace Lamar, Liberty, Ind.

SPECIAL SALE—Low price for 30 days on 1-story 10-frame single-wall dovetail hives, KD in packages of 5. Material and workmanship guaranteed to please. Write for price stating quantity wanted. A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—36 standard 10-frame deep hive-bodies with self-spacing frames. Eight Excelsior covers, 10 reversible bottoms, all new. One two-frame Cowan extractor, used very little; 15 or 20 hive-bodies used one season, two uncapping knives. Best offer by April 1 takes all or any part. Henry McIntosh, Robinson, R. D. No. 2, Ills.

FOR SALE—To further reduce our large equipment, we offer a full line of NEW and SLIGHTLY USED Jumbo and standard Langstroth bee supplies of Root manufacture. We also offer full colonies of bees in Jumbo and Langstroth hives. Complete list free. We can save you real money. No disease. The Hofmann Apiaries, Janesville, Minn.

WANTS AND EXCHANGES.

ROYAL typewriter, $65.00. Will trade for honey, queens or offer. E. A. Harris, Albany, Ala.

WANTED—Bees on shares. M. Knudsen, 153 Institute Place, Chicago, Ills.

WILL buy or rent 25 to 150 colonies bees near Chicago. J. W. Hosie, 1618 W. Adams St., Chicago, Ill.

WANTED—Used "Buckeye" hives. Give price and number immediately. James Cockburn, Wellsboro, Pa.

BEEHIVES WANTED—Double-walled hives, must be in good condition and cheap for cash. D. H. Rice, Jr., Barre, Mass.

REGISTERED Shorthorn cow and two heifers. Will exchange for bees, if warranted disease-free. C. L. Monier, Sparland, Ill.

WANTED—A bee inspector for Fremont County for the season of 1922. Address communications to W. E. Chadwick, Lander, Wyo.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa, Council Bluffs, Iowa.

TRADE—Winchester repeating 12-gauge gun, model 1897, with leather case. All good as new; price $40.00. For Italian bees and queens. Dr. W. S. Windle, Oskaloosa, Iowa.

FOR SALE OR EXCHANGE—28 10-frame supers, nailed and painted, used 3 years. For 4¼ x 4¼ x 1⅞ beeway sections. Mineola Apiaries, Bath, N. Car.

WANTED—200 or less colonies of bees, any style hive, for spring delivery. When quoting price please remember 6c to 8c honey is in sight for next crop. Address A. W. Smith, Birmingham, Mich.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

FOR SALE OR TRADE—For pure-bred Nubian doe a young pure Nubian buck from one of the best herds in California. Has been tested and ready for service. R. M. Collins, 630 S. 22nd St., Muskogee, Okla.

PACKAGE BEES WANTED—I expect many more orders for package bees than I have bees for sale. Breeders and others having more bees than they can sell will do well by getting in touch with me. E. D. Townsend, Marksville, La.

FOR TRADE OR SALE CHEAP—Good sectional honey-box machinery. Automatic V-groover, a fine double-head beeway cutter for sections and Hoffman frames, and a dovetailing machine. Can use some brood foundation and 10-frame L. hive-bodies. O. H. Townsend, Otsego, R. D. No. 2, Mich.

EXCHANGE—I have a 400-egg Queen incubator to trade for one small extractor, colonies of Italian bees in Root standard 10-frame or Buckeye hives, or 3-frame nuclei with queens. Must guarantee no disease. R. F. Pratt, R. D. No. 23, Box 13, East Akron, Ohio.

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1922 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Son, Hamilton, Illinois.

FOR TRADE—A 5 and 2 H. P. marine Detroit engine, running order. Medical books, office chair, instruments, spray outfit, Old Trusty incubators, fine muzzle-loading rifles, for package bees and queens, or colonies, Alexander feeders, capping melter, power extractor, 4¼ x 4¼ x 1⅞ sections. Doctor Gibbs, Waldron, Mich.

WANTED—To hear from parties that have bees to sell in the following states, either with a farm or separate. State the amount that you have in the first letter, and just what you want for them, and all information, as to condition of bees, whether you have disease, and just what you have in the way of a farm; farm need not be large, but location must be good; price must be right, and in keeping with the times, Michigan (central part preferred), Wisconsin, Mississippi, Alabama, Illinois or New York. O. S. Mullin, 42 Morgantown St., Uniontown, Pa.

SEEDS AND PLANTS.

"We will not guarantee the purity of any seed advertised nor any nursery stock, as nurserymen ordinarily will not do this themselves; but any seedman or nurseryman advertising in our columns will have given us excellent references in advance, and our readers may consider this fact in their favor."—From Our Guarantee and Advertising Conditions.

HUBAM—SCARIFIED, POUND, $1.45; 10, $11.00; 25, $25.00; prepaid.—Phelps, Shawnee, Okla.

FOR SALE—Northern-grown Hubam clover seed, $2.00 per lb., prepaid. Homer Flickinger, R. F. D. No. 2, Cheboygan, Mich.

HUBAM.—AMES, IOWA, STRAIN, SCARIFIED, RECLEANED.—State test shows 99% pure and no weed seeds.—You don't pay for hulls, trash or weed seed.—Order from these ads. You'll be pleased. Distance is no barrier.—We deliver:—100 pounds, $70.00.—Chas. B. Phelps, Shawnee, Okla.

HUBAM clover seed, ½ lb., $1.00; lb., $1.75; 10 lbs., $16.50. Noble Nursery, Noble, Okla.

PURE Hubam, unhulled clover seed, 1 lb., $1.10; 5 lbs., $5.00, postpaid. Evan Jones, Williamstown. N. J.

HUBAM CLOVER—Genuine Hughes strain, scarified seed. 1 oz. to 16 oz., 15c oz.; 1 lb. to any amount, 90c lb. net. Sacks free. Post or freight paid. Jas H. Kitchen, R. D. No. 5, Springfield, Ohio.

HUBAM.—SCARIFIED, RECLEANED, GENUINE; no other sweet clover within miles.—References, and full proof furnished.—Note—all our prices are prepaid:—10 pounds, $11.00; 25, $25.00; 50, $40.00; 100, $70.00.—Phelps, Shawnee, Okla.

BEES AND QUEENS.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

TRY ACHORD'S BEES and QUEENS. Price list by return mail. W. D. Achord, Fitzpatrick, Ala.

WHEN it's GOLDEN, it's PHELPS. C. W. Phelps & Son, Binghamton, N. Y.

A card will bring our circular and price list of our reliable bees and queens. R. V. Stearns, Brady, Texas.

BOOKING orders now for early queens and package bees. Write for prices. Sarasota Bee Co., Sarasota, Fla.

WARNER'S QUALITY QUEENS—Write for illustrated catalog. Elton Warner, R. D. No. 1, Asheville, N. C.

FOR package bees and Italian queens, write Jones & Stevenson, Akers, La. Safe arrival and satisfaction guaranteed.

FOR SALE—Carload bees, nuclei, pound packages, full colonies. See our ad elsewhere. The Stover Apiaries, Mayhew, Miss.

PHELPS GOLDEN QUEENS will please you. Mated, $2.00; 6, $10.00; or $18.00 a doz. C. W. Phelps & Son, Binghamton, N. Y.

ROSEDALE APIARIES, Route No. 2, Alexandria, La., J. B. Marshall and H. P. Le Blanc, Props. See our larger ad elsewhere.

QUEENS, day-old and untested. Bees, 2-lb. packages. Thompson safety cages. Resistant Italians. Circular ready. James McKee, Riverside, Calif.

BUSINESS-FIRST queens offer you their illuminated descriptive handbook with prices, select untested, $1.50. M. F. Perry, Bradentown, Fla.

PACKAGE BEES—$1.50 per pound. Untested Italian or Carniolan queens, $1.25 each. See larger adv. Circular free. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

WE are booking orders now for spring delivery for the famous "Colorado Queens." Send your order early so as to be sure to get your queens. C. I. Goodridge, Wheatridge, Colo.

SELECT THREE-BAND ITALIANS, tested queens, $2.50 each; untested, $1.25 each, any number. Send for circular. Geo. W. Coltrin & Son, Mathis, Texas.

FOR SALE—100 colonies of certified Italian bees 8 L. shipping hives. Hives to be returned at my expense. Under state supervision 23 years. Charles Stewart, Johnstown, N. Y.

FOR SALE—Home and apiary, dwelling and honey-house, and 4 lots, 120 colonies of bees, supers, drawn combs, power extracting outfit, no disease. C. H. Harlan, Spring Valley, Wis.

FOR SALE—75 colonies bees in 10-frame Langstroth hives, now packed with abundant stores. W. C. Riddings, Lawrenceburg, Ind.

PACKAGE bees and nuclei. Booking orders 1922 delivery. See ad elsewhere or write. Canadian orders not solicited. M. L. Nisbet & Bro., Bainbridge, Ga.

FOR SALE—10 colonies Italian bees in standard hives. Also 30 supers with drawn combs. Never had disease. Write Emil Uyldert, New Brunswick, N. J.

MOTT'S Northern-bred Italian queens. Will have packages of bees to offer in June. Plans "How to Introduce Queens" and "Increase," 25c. E. E. Mott, Glenwood, Mich.

FOR SALE—15 colonies of Italian bees of 10 frames, wired and combs built from full sheets of foundation. $10.00 per colony. H. Shaffer, 2860 Harrison Ave., Cincinnati, Ohio.

FOR SALE—Three-band Italian queens, select untested, $1.00 each; $12.00 per doz. 2-lb. package with queen, $5.00. Satisfaction guaranteed. W. T. Perdue & Sons, Fort Deposit, Ala.

FOR SALE—Early package bees, nuclei and queens. We handle 1800 colonies. Shipping season March 1 to June 1. Loveitt Honey Co., Phoenix, Ariz.

FOR SALE—Bright Italian queens, 1, $1.25; 12, $12.00. Write for prices of nuclei and pound packages. Safe arrival guaranteed. T. J. Talley, Greenville, R. D. No. 3, Ala.

BEES BY THE POUND — Also QUEENS. Booking orders now. FREE circulars giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas, E. B. Ault, Prop.

FOR SALE—Golden Italian queens ready May 1. 1 queen, $1.25; 6, $6.50; 12, $12.00; 100, $85.00. Virgins, 50c each. Write for prices of nuclei. W. W. Talley, Greenville, R. D. No. 4, Ala.

YOUR name on a card will bring by return mail descriptive booklet with prices of my Improved Strain of Italian queens. Twenty-four years' experience. J. B. Hollopeter, Queenbreeder, Rockton, Pa.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, $1.00 each; $10.00 per dozen; $75 per 100. Pure mating, safe arrival and satisfaction guaranteed.

FOR SALE—10 colonies Italian bees in 10-frame Root hives, combs built from full sheets foundation. Young queens. No disease. Each $8.00. Three 10-frame Root hives, each $2.00. Pearl Barton, Gentryville, R. D. No. 1, Ind.

FOR SALE—A complete bee-yard of 40 colonies. Material for 100 more. Honey-house, 10 x 14. 10-frame hives, everything new. In best location. Spring feed in abundance. Alfalfa all around. J. T. Hammersmark, 645 W. 6th St., Reno, Nev.

2-POUND PACKAGES—3-banded Italian bees with queens, $5.25 each, 10 or more, $5.00 each; one-fourth down books order. Shipment begins April 20, no disease and perfect satisfaction guaranteed. J. J. Scott, Crowville, La.

MY GOLDEN ITALIAN QUEENS possess the qualities which make beekeeping profitable. Mated, $1.00 each, $10.00 per doz. Virgins, 50c each or $4.25 per doz. Safe arrival and satisfaction guaranteed. Your orders solicited. Crenshaw County Apiary (Melvin Talley, Prop.), Rutledge, Ala.

EXPRESS is lower on northern bees. Prices no higher. 2 lbs. Italian bees with queen on comb of stores in May, $5.75. Comb of stores insures success. Prompt delivery and safe arrival guaranteed. Card brings circular of golden and 3-banded queens. Ross B. Scott, LaGrange, Ind.

FOR SALE—Package bees and Italian queens. We have been shipping packages and queens for years. Try us! Allenville Apiaries, Allenville, Ala.

FOR SALE—Three-banded Italian bees, with good queens, in either Jumbo or Langstroth hives. No disease. Send for complete description. The Hofmann Apiaries, Janesville, Minn.

BOOKING orders for spring delivery. Queens, package bees, and nuclei. The reliable A. I. Root strain. Golden and leather-colored Italians. Virgins, 60c; untested, $1.25. Circular free. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

ORDERS booked now for spring delivery, 3-frame nucleus and queen, $6.50; select tested, $7.50; Dr. Miller's strain. No pound packages. Low express rates and quick transit north. 10% with order. S. G. Crocker, Jr., Roland Park, Baltimore, Md.

BEES BY THE POUND—I am prepared to furnish for April or May deliveries Italian bees in one, two or three pound packages. Shipped in Root-Pritchard or Root combless shipping cages. Correspondence solicited. G. O. Pharr, New Iberia, La.

COLORADO HEADQUARTERS for QUEENS—Northern-bred leather-colored three-band Italians. Safe arrival guaranteed. Booking orders now for June 1st delivery. Send for circular and price list. Loveland Honey & Mercantile Co., Loveland, Colo.

BRIGHT ITALIAN QUEENS, $1.00 each, 10% less in dozen lots. Pure mating, safe arrival and reasonable satisfaction guaranteed in U. S. and Canada. Write us for prices on package bees. We have them in season. Graydon Bros., Rt. 4, Greenville, Ala.

FOR SALE—Three-band leather-colored bees and queens—big cut in prices. No disease. Safe arrival and satisfaction guaranteed. Shipping season April 15 to May 25. Send for circular and prices on quantities. J. M. Cutts & Son, R. D. No. 1, Montgomery, Ala.

MERRILL'S Selected Italian Queens combine the qualities you want. They are large, vigorous, well marked, beautiful and gentle. Try them at $1.00 each; 6, $5.50; 12, $10.80. Ready after April 15. I ship nothing but the best. Order now. G. H. Merrill, Greenville, R. D. No. 5, S. C.

FOR SALE—200 colonies Italian bees in new standard 10-frame hives. Requeened last August with the famous Root queens. Price $10.00 per colony. Also 15 colonies, same as above, in 8-frame hives, halved together at the corners. Price $7.00 per colony. James Dearmin, Oakland, Minn.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you want. They are GREAT HONEY-GATHERERS, BEAUTIFUL and GENTLE. Virgins, $1.00; mated, $2.00; 6 for $10.00, or $18.00 per doz.; tested, $5.00. Breeders, $10.00 to $20. Safe arrival guaranteed only in the U. S. and Canada. C. W. Phelps & Son, Binghamton, N. Y.

MAY delivery, one, two and three pound packages, $3.00, $4.00 and $5.00. Nuclei, $3.00, $4.25 and $5.50, with select untested Italian queens. Special orders solicited. Select untested three-band queens, April and May, $1.25, 6 or more, $1.00 each. 20% books order. State health certificate. Safe arrival and satisfaction guaranteed. Address Apalachicola, Fla., office. Tupelo Honey Co., Columbia, Ala.

BEES—2-lb. packages, $3.50; 6 or more, $3.45; 12 or more, $3.40; 25 or more, $3.25; young Italian queens, $1.25 extra. Shipments April 10 to May 1, by express f. o. b. New Orleans. Hardy three-banded and leather-colored stock, free from disease, shipped in Root cages on frame of foundation, safe arrival and satisfaction guaranteed or money refunded, 25% deposit to book your order. Order early and state date you prefer shipment. Reference A. I. Root Co., New Orleans, La. R. S. Knight, 4927 Conti St., New Orleans, La.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Our aim is not quantity but quality. Our first consideration is to give perfect satisfaction. Untested, $1.50 each; 6 for $8.00; tested, $2.00 each; select tested, $3.00 each. Prof. W. A. Matheny, Ohio University, Athens, Ohio.

FULL COLONIES, 2-FRAME NUCLEI, PACKAGE BEES and ITALIAN QUEENS from the apiaries of E. R. King, formerly Deputy Inspector of Ohio, later in charge of Apiculture at Cornell University. Write us what you want. Prices and information will be sent you. King's Apiaries, McArthur, Ohio.

FOR SALE—18 colonies Italian bees, on full sheets wired foundation in Hoffman frames, will sell one or all and deliver when weather allows. No disease. A certificate if desired. Many of these colonies are headed by 1921 queens from the Stover Apiaries. $10.00 for Stover queens; $9.00 for others. Benj. B. Jones, Lake Roland, Md.

FOR SALE—200 colonies of the celebrated Moore strain of leather-colored Italians. They are in Langstroth hives, combs all built on wired foundation. All have tested queens less than one year old. No disease among or near them. Price in lots of one to 50, $12.00 each; 50 to 100, $11.50 each; 100 or more, $11.00 per colony. Elmer Hutchinson & Son, Lake City, Mich.

FOR SALE—Golden Italian queens and bees, untested, 1 queen, $1.00; 1 doz., $10.00; 100, $75.00. 2-lb. package, with queen, $5.00; 1-lb. package with queen, $3.00; 12 or more, 5% off. 2-frame nucleus with queen, $5.00; 15 or more, 5% off. Safe arrival and satisfaction guaranteed. J. F. Rogers, Greenville, R. D. No. 3, Ala.

FOR SALE—Package bees for spring delivery, three-banded strain, bred for business, 20% cash books your order. Safe arrival and satisfaction guaranteed. A two-pound package of bees, and select untested queen for $5.00; 25 or more for $4.75 each. Write for prices on larger lots. Caney Valley Apiaries, J. D. Yancey, Mgr., Bay City, Texas.

LARGE, HARDY, PROLIFIC QUEENS. Three-band Italians and Goldens. Pure mating and safe arrival guaranteed. We ship only queens that are topnotchers in size, prolificness and color. After June 1: untested queens, $1.50 each; 6 for $8.00; 12 or more, $1.40 each; 25 or more, $1.25 each. Tested queens, $3.00 each; 6 for $16.00. Buckeye Bee Co., Zoarville, Ohio.

WE know our queens are much better than all the rest. By actual test side by side, all workers look just alike. Three bands only. If they show the slightest trace of four bands, fire them back to us, for that shows very poor breeding indeed. Pure bred Italian bees only show three bands. Untested, $1.00; select untested, $1.25; tested, $2.00; select tested, $3.00. F. M. Russell, Roxbury, Ohio.

CONNECTICUT queens. Highest grade 3-banded Italians ready June 1. Select untested, $1.25 each; 6, $6.50; 12, $12.00; 50, $47.50; 100, $90. Two lbs. bees with queen, $5.00; 3 lbs. with queen, $7.00. Two-frame nuclei with queen, $5.50; 3-frame with queen, $7.50. Select virgin queens (not culls), 50c each, $45.00 per 100. No disease and satisfaction guaranteed. A. E. Crandall, Berlin, Conn.

THAT PRITCHARD QUEENS AND PRITCHARD SERVICE made a hit last season is proven by the many letters of appreciation and repeated orders received. This year we are BETTER PREPARED with a LARGER OUTFIT AND REDUCED PRICE. Three-banded Italians, untested, $1.25 each, 6 for $7.00; select untested, $1.50 each, 6 for $8.50; select tested, $3.00 each. Queens clipped free on request. We are booking orders now. Send yours at once and we will do our best to ship on date you desire. Acknowledgment and directions for introducing sent on receipt of order. Safe arrival and satisfaction guaranteed. Untested ready about June 1. Arlie Pritchard, R. D. No. 3, Medina, Ohio.

FOR SALE—Limited number 3-lb. package bees with untested Italian queen, $5.50 each, ¼ cash with order. Shipped June 1 to 10. No foul brood in county. Mineola Apiaries, Bruce Anderson, Owner and Operator, Bath, N. Car.

My 1922 queens and bees for sale, the big yellow kind, none better. Satisfaction guaranteed or money back. Price, untested, $1.00 each; $10.00 per doz., or $80.00 per 100. Tested, $1.75. E. F. Day, Honoraville, Ala.

THREE pounds of bees, shipped on a Hoffman frame of brood and honey, with an untested Italian queen for $6.00. No disease, satisfaction and safe arrival guaranteed. 25% books your order for April and May shipments. E. J. Beridon, Jr., Mansura, La.

FOR SALE—Three-banded Italian bees and queens. 2-lb. package with queen, $4.75; without queen, $3.75. Queens, $1.00 each, $11.00 per dozen; 25 per cent cash books order; safe arrival and satisfaction guaranteed in U. S. and Canada. We ship nothing but the best. W. C. Smith & Co., Calhoun, Ala.

I EXPECT to be ready to start shipping 3-lb. packages of bees with 1 frame, 1 untested queen, at $6.00; 2-frame nuclei with untested queen, $4.50, about April 15. Young tested queen, 50c extra, or $1.50 each. I think I was the second to ship packages of bees from this state and know how to serve customers. F. M. Morgan, Hamburg, La.

FOR MAY DELIVERY—One vigorous Italian queen, one frame emerging brood, one pound bees, price complete, $5.00. Additional pound bees, $1.00. Additional frame of brood, $1.00. Banat mixed queens and bees 5% discount. After May 25 10% discount on all. Safe arrival guaranteed. Send 10% to book order. T. W. Livingston, Norman Park, Ga.

"SHE-SUITS-QUEENS." See advertisement on inner back cover of the January issue. The generous discount is for the purpose of getting my orders booked before the season opens. It is a great advantage to a queen-breeder to know weeks ahead just how many queens he must get ready. If he does not know, he either will have hundreds on hand with no sale at times, or will have orders for hundreds and no queens to fill the orders. The discount will positively be discontinued at the opening of the season. Get your orders in early that you may be sure of your dates. Allen Latham, Norwichtown, Conn.

LOW PRICES—High quality stock for 1922, 2-frame nuclei and untested Italian queen, $5.00 each; 25 or more, $4.75 each. 3-frame nuclei and untested Italian queen, $6.50 each; 25 or more, $6.25 each. If tested queens are wanted, add 50c per nucleus. All prices f. o. b., Macon, Miss. No disease has ever been in our yards. Will replace any loss or refund money, on purchaser sending us bad order receipt from express agent. Terms: 10% of amount with order, balance just before shipment is made. Order early and get your bees when you want them. Hummer Bees, Queens and Service will give satisfaction. No queens except with nuclei. Geo. A. Hummer & Sons, Prairie Point, Miss.

AN OPPORTUNITY FOR A BIG BEEKEEPER—Do you want to keep bees in an excellent tropical climate in the Dominican Republic, where there is NO BEE DISEASE? Laws to keep it out. Honey-flows from December to August. No winter problem. My five apiaries of about 1000 colonies in a radius of 15 miles, all in standard 10-frame hives, are capable of producing nearly 500,000 pounds of fine honey annually. Experienced help cheap. Living costs very low. Good local market or freight rates to N. Y. less than 10c a gal. Selling for family reasons, old age, and ill health. Everything including lands, houses, tanks, extractors, supers and all necessary equipment, including a Ford, for immediate sale or on shares to the right man, who can pay me from his profits. Address until April 1. H. J. Brandon, 2007 Jackson St., N. E. Washington, D. C.

BURLESON ITALIAN BEES AND QUEENS—In 2 and 3 lb. packages; 1 2-lb. package with select untested queen, $5.00; 25 or more, $4.50; 1 3-lb. package with select untested Italian queen, $6.25; 25 or more, $5.75. Ten per cent with order, balance 10 days before shipment; 1000 colonies to draw from. Can deliver the goods on time. Safe arrival and satisfaction guaranteed. T. W. Burleson, Waxahachie, Texas.

BEES—Engage your queens from any reliable dealer, and we will furnish you the bees. One-lb. pkg., $1.35 each; 2-lb. pkg., $2.50 each; 3-lb. pkg., $3.00 each. No orders accepted for less than 5 lbs. 10% will book your order. Bees will move exact date ordered. 1500 colonies to draw from. Our apiaries are favorably located for early breeding, hence all orders filled with young, vigorous bees. Never had a case of disease in our apiaries. We are experienced shippers. We give a full guarantee, safe arrival and satisfaction. Brazos Valley Apiaries, H. E. Graham, Prop., Gause, Texas.

FOR SPRING DELIVERY—Vigorous leather-colored Italian queens, famous three-banded stock, also bees in packages. Can ship April 15 or May 1. Two-pound package with laying queen, $6; three-pound package with laying queen, $7.25. Three-frame nucleus with laying queen, same price as three pounds bees with laying queen. If you wish a purely-mated queen in a package, add $1. I offer thoroughbred stock, and stock bred for business. I am now booking orders for spring delivery. Safe arrival guaranteed, or replacement or money refunded. Order early. C. M. Elfer, St. Rose, La.

PACKAGE BEES—I offer for sale 100 4-lb. packages of hybrid bees with hybrid queens, not over one year old, no guarantee of purity, at the same price and condition as the lot offered from Georgia in another liner. Also 100 2-lb. packages hybrid bees and hybrid queens as above, only most of the 2-lb. packages will be supplied with young untested queens, bred from pure stock; mating not guaranteed at the low price I am offering them as follows: One 2-lb. package with queen, $5.00; 10 or more packages at $4.00 each. These bees are from La. and to be sure of getting any quantity of them would advise wiring or writing at once, as they will go fast at this low price. No disease ever in this locality. Safe arrival guaranteed. Address E. D. Townsend, Marksville, La.

ITALIAN BEES AND QUEENS—I am wintering tested queens, reared late last fall, for early shipments with packages. Pound packages shipped with comb. Shipped when you want, with tested queens, 2-lb. pkg., $5.75; 12 or more, $5.50 each; 3-lb. pkg., $7.25; 12 or more, $7.00 each. Nuclei, per frame, same prices respectively as pound packages. For May delivery with untested queens, deduct 50c per package. Queens, May and June, untested, $1.50; 12, $1.25 each; select untested, $2.00; tested, $2.25; 6, $2.00 each; select tested, $2.75. 10% discount on orders for queens received prior to April 1. Certificate of inspection with shipments. Satisfaction and safe arrival guaranteed. 25% books your order. J. L. St. Romain, Hamburg, La.

QUEENS AND PACKAGE BEES—March 1 finds us ready for shipping. Let us book you for short notice shipping. Bees and queens for your unpacking time. We have just added 1200 colonies of bees to our business in Mesa, Ariz., with our Mr. Jas. Lisonbee, where weather and spring conditions are ideal for March and April package bees. All queens will be shipped from our large queen yards at Sandia, Texas, where we breed our pedigreed strain of three-band leather-colored queens from tested honey-producing mothers, and 8 miles out we breed our special golden queens that produce bees solid yellow to the tip. Very gentle, prolific and good honey-getters. 1 untested queen, $1.50; 25 or more, $1.25 each; 1 select untested queen, $1.70; 25 or more, $1.40 each; 1 select tested queen, $3.00; tested breeder, $5.00. 1-lb. package bees, $2.25; 25 or more, $2.15; 1 2-lb. package bees, $3.75; 50 to 100, $2.60 each. Larger size quoted on request, also parcel post packages. Safe arrival guaranteed. Send all orders to Dr. White Bee Company, Sandia, Texas.

FOR SALE—100% queens bred from extra-select Jay Smith breeder. Larger queens from my cell builders reinforced with hatching brood and mated in standard frame nuclei. I guarantee safe arrival and entire satisfaction and that every queen lays before being caged. Also package bees. I am after a name and reputation. Give me a trial. Select untested, 1, $1.25; 6, $7.00; 12, $13.00; 25 to 100, $1.00 each. H. Peterman, R. F. D., Lathrop, Calif.

PACKAGE BEES—While publishing the Beekeepers' Review I sold thousands of packages of bees for others and I do not think I ever offered a better bargain on bees than I can offer on 200 4-lb. packages from Georgia. They are really a one-frame nucleus containing 4 lbs. of bees, the comb containing the feed for the bees while in transit. There is really no loss in shipping bees this way, as I know from long experience in shipping hundreds of packages. The queens are tested three-banded stock less than a year old,except a few mismated ones which will be replaced by young ones reared this spring. There has never been disease in this location. Safe delivery by express guaranteed. Delivery to be made between April 20 and May 10. The regular price of package bees seems to be $2.00 per pound and tested queens, $2.00 each, which would make one package at market price cost $10.00. I quote 10 4-lb. packages of bees with tested queens at $60.00; 50 packages at $287.50; 100 packages, $550.00. Large purchasers had better wire in their order, as they will not last long at this low price. Write or wire me here at my winter home. Address E. D. Townsend, Marksville, La.

QUEENS—Bright, three-band Italian. We are now booking orders for the season of 1922. Shipments of queens this year will commence on March 15. All queens are mated in standard full-sized nuclei. We operate four thousand standard full-sized nuclei. Capacity and output this season five thousand queens per month. We own, operate and run for extracted honey in the states of California and Nevada twelve thousand colonies of bees. All of our breeders are selected queens whose colonies headed these twelve thousand colonies of bees last season. Better selection of breeders cannot be equaled or had anywhere. We have the capacity and output of queens to make shipments promptly as and when promised. We guarantee safe arrival of queens. Prices—Mated, untested queens, 1, $1.00; 6, $5.50; 12, $10.00. In larger quantity, 75c each. Terms, 10% deposit on booking order. Balance at time of shipment. See our large advertisement in this magazine. Western Bee Farms Corporation (Principal): Western Honey Corporation and Western Citrus Honey Corporation (Associated Corporations); Claus Spreckels Building, No. 703 Market Street, San Francisco, California.

MISCELLANEOUS.

FOR SALE—A Cinch telescope, surveyor's compass, little used, very accurate. O. Bromfield, So, Jacksonville, Box 312, Rt. 8, Fla.

SORGHUM POP, Burbanks new popcorn, pkg. 15c, 4-oz. pkg. 25c, postpaid. Emil A. Lund, Vining, Minn.

FOR SALE—One squirrel cage broom winder, one broom vise and a quantity of supplies. Good condition, price $30.00. James S. Green, Kinzua, Pa.

TYPEWRITERS—All makes slightly used; $20 up. Easy payments. Free trial. Express prepaid. Guaranteed two years. Payne Company, Rosedale, Kansas.

MEDICINAL roots and herbs are very profitable to grow. We especially recommend growing Golden Seal, which with good care will yield as high as $10,000 per acre for each crop. It takes several years to mature but will average $1000 a year. Special Crops, a monthly paper, tells how. Sample copy, 10c, $1.00 per year. Address Special Crops Pub. Co., Box "G," Skaneateles, N. Y.

HELP WANTED.

WANTED—An experienced beeman. State experience, reference, age, married or single, and wages wanted. W. J. Stahmann, Clint, Texas.

WANTED—Two industrious young men of good habits, to work with bees and on farm the coming season. Board and lodging furnished, 13 apiaries. N. L. Stevens, Venice Center, N. Y.

WANTED—Man to help with 150 colonies of bees, poultry and gardening at Madison, N. J. Give experience. L. W. Smith, 56 Williams St., New York City.

WANTED—Young man with general experience for the coming bee season. State qualifications in first letter. Room and board furnished. B. B. Coggshall, Groton, R. D. No. 12, N. Y.

WANTED—Clean active young man to work at bee work and learn business. State age, height, weight, experience if any, and wages expected, all in first letter. Apiaries at Filion, Mich. Address David Running, Filion, Mich., or Sumterville, Ala.

WANTED—A man to help work in bees from April 15 to Sept. 15, 1922, who has had some experience with bees. State age, experience and wages with board furnished in first letter. The Alexander Apiary, Delanson, N. Y.

WANTED—Young man for active season of 1922, in system of 10 apiaries. State age, weight, experience and wages expected in first letter. Possible permanent position for satisfactory man. Ray C. Wilcox, Odessa, N. Y.

AM prepared to take as students several young men for the bee season of 1922. They must be clean in mind and body. Operating 8 to 12 apiaries. Board given for services and something more. R. F. Holtermann, Brantford, Ont., Can.

WANTED—Four men for the coming season experienced in comb-honey production, to work in our apiaries in Montana. Give references, experience and wages expected in first letter. Steady work for right man. Weber Bros. Honey Co., Blackfoot, Idaho.

EXPERIENCE AND FAIR WAGES given to active young man willing to work for help in well-equipped beekeeping business of 600 colonies. Season April to November. State occupation, weight, height, age and experience. The Pettit Apiaries, Georgetown, Ont., Can.

WANTED—By a large and financially responsible corporation, operating at several different points in the states of California and Nevada, several experienced bee men and several helpers. Good wages (board and room) and permanent position, twelve months a year if work is satisfactory. Financial references furnished if desired. Give age, experience, and full particulars in first letter. Apply Western Bee Farms Corporation, 703 Market St., San Francisco, Calif.

SITUATION WANTED.

WANTED—Position in apiary. Have had experience. Address W. I. Reed, 118 Forest Road, Raleigh, N. C.

SEVERAL intelligent and hard-working students require work with commercial apiarists for summer. United States or Canada. Professor Millen, Guelph, Ontario, Canada.

WANTED—Work as assistant in apiary during summer, by High School teacher. Age 30, some experience, absolutely dependable. Address Paul H. Herzog, Pawnee, Ill.

WOMAN—Some experience, wants work with queen-breeder or commercial apiary, comb honey preferred, California. Barnwell, Apiculture Department, O. A. C., Guelph, Ont., Can.

Rider Agents Wanted
Select from **44 Styles**, colors and sizes of **Ranger** Bicycles. Ride and exhibit sample Ranger and make money. **Delivered free**, *express* prepaid, **on Approval.**
12 Months to Pay On any Ranger if desired. Write today for our marvelous prices and terms.
Tires Lamps, horns, wheels, parts, equipment, and repairs at half usual price. Save $10 to $25 on your Ranger bicycle.
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To build new business we will send you a trial package of this **Wonderful New Tomato** and our big 160-page Seed and Nursery Catalog. Tells how to plan, plant and care for gardens, **and the prices are lower than ever.** Condon's Seeds yield abundantly the finest Fruits, Flowers and Vegetables. Write—today.
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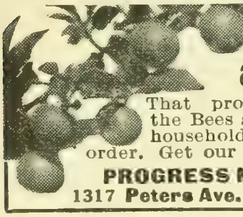

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That provide Nectar for the Bees and Fruit for the household. No Cash with order. Get our Catalog TODAY.
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66 varieties. Also Small Fruits, Trees, etc. Best rooted stock. Genuine. Cheap. 2 sample vines mailed for 20c. Descriptive price list free. **LEWIS ROESCH, Box C, Fredonia, N. Y.**

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KELLOGG'S
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Write quick for this valuable 68 page book of strawberry information and art. Written by America's most successful strawberry grower. Explains how he makes poor soil rich without manure or fertilizer and gives his secrets for growing the big crops of summer and fall strawberries that won him fame and fortune. Pictures in colors and tells all about his wonderful new Everbearer that won the $1,000.00 Cash Prize. Shows 34 pages of strawberries, strawberry fields and gardens in natural color. Gives 30 tested recipes for making the most delicious strawberry dainties. Contains nothing but proven facts. Gives you the benefit of more than 40 years of successful strawberry experience. Send for this valuable book and learn how easy it is to make big money growing Kellogg Strawberries The Kellogg Way. Worth its weight in gold--costs you nothing. Just send your name and address--a postal will do. The book is FREE.

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THE D. HILL NURSERY CO., INC., DUNDEE, ILL.
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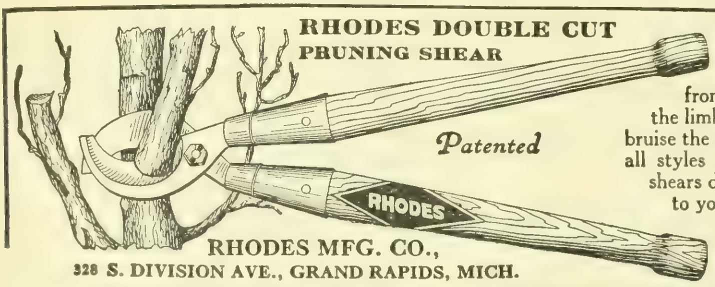
RHODES DOUBLE CUT PRUNING SHEAR



THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door. Write for circular and prices.

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GARDEN SEED **BELL BRAND**
IS TRADE MARK
Isbell's Michigan-grown Garden Seeds assure a big-yielding, profitable garden, for they are thoroughbred stock—the result of 43 years of development and selection. Send today, for Isbell's 1922 Seed Annual, giving valuable information on quality seeds and quoting direct-from-grower prices.
Write for Isbell's 1922 Catalog
S. M. ISBELL & COMPANY **678 Mechanic St.** (30) **Jackson, Mich.**

Notes on Transplanting.—Continued from p. 159

sunshine in California so warm and the shade so cold? One can journey from a May day in the temperate zone to something like December in the Arctic circle, by taking a few steps around the corner of a house. It affords a fascinating variation in climate.

In spite of little drawbacks like freezing temperature, low gas pressure and recent transplanting we perennials are thriving and happy, and so are the little plants, springing up around our roots, which were transplanted with us. The large pot (house in beautiful Pasadena) is comfortable now that the weather is moderating and the view on every side is wonderful. To the south are orange trees, palms, pepper trees, rose-covered pergolas and green lawns and soon there will be flowers again. To the northeast lies the mountain range with its ever changing beauty, with the glistening, snowy crown of ''Old Baldy'' peeping over the shoulders of the nearer mountains. The future in our chosen state looks beautiful and interesting.

450,000 TREES
200 varieties. Also **Grapes, Small Fruits, etc.** Best rooted stock. Genuine. Cheap. 2 sample currants mailed for 20c. Descriptive price list free. **LEWIS ROESCH, Box C, Fredonia, N.Y.**

Three-Banded Italian Bees & Queens

2 lbs. bees, 1 untested queen, $5.00. Special price on 2-lb. packages without queens. No diseases. Safe delivery and satisfaction guaranteed. Ask for prices on large orders. Health certificate with each shipment.

J. L. LEATH,
CORINTH, MISSISSIPPI.

Three-Banded Italian
QUEENS

Bred from queens whose bees have given big crops of honey. Pure mating and satisfaction guaranteed. May 15 to June 15: 1, $1.50; 6, $7.50; 12, $13.50. All orders filled in rotation. First on list will be first filled.

J. D. KROHA, 87 North St., Danbury, Conn.

BURLESON'S OLD RELIABLE
Three-Banded Italian Queens

NONE BETTER—Not as cheap as some, but worth the difference. I guarantee them to be absolutely free from brood diseases.

These are My 1922 Prices—Untested, $1.25 each; $13.50 per doz; 25 or more, $1 each. Select Untested, $1.50 each; $15 per doz., 25 or more, $1.15 each. Select tested, $3 each. Considering the high quality of my queens combined with service and reliability justifies the above prices. **Send all orders together with remittance to**

J. W. SEAY, Mgr., MATHIS, TEXAS
T. W. BURLESON, WAXAHACHIE, TEXAS.

BANKING BY MAIL AT 4%

BANKING BY MAIL.

This strong bank, which is under strict State Supervision, receives deposits by mail and pays 4% interest, compounded twice a year. Deposits received the first five days of the month draw interest from the first.

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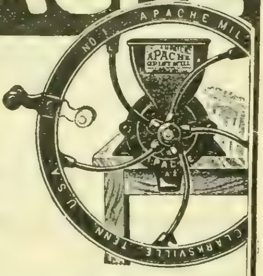
MEDINA, OHIO



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APACHE
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PREPAID FOR ONLY

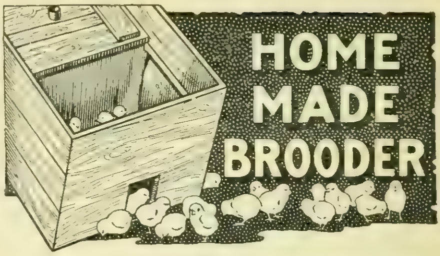
$8.00

FEED the hopper, turn the wheel, and enjoy making your own wholesome whole wheat or graham flour, old-fashioned corn meal, rye flour, chops and hominy, and *bring down living cost.* Best coffee and spice grinder. If you have poultry, grind your chicken feed, save feed money and get more eggs.

Apache grinding plates of special mixture iron made to give longest wear. Steel ball bearings make it only a boy's job to run it. Send money or check today. Satisfaction guaranteed. For the present we can make prompt delivery. So don't delay.

A. H. PATCH, Inc., Clarksville, Tenn.

The Apache Grist Mill is companion to the Black Hawk Corn Sheller, famous for 35 years for its "Can't Wear Out" Guarantee.



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I want you to try my Brooder and will send you plans for making it, together with a Putnam Brooder Heater, for $4.75; all postpaid. Try the Brooder out and if you don't say it's the best Brooder you ever used, return the Heater in 30 days and get your money back. Your dealer will make you the same offer and guarantee. Ask him, but if he does not carry the Brooder Heater, send me $4.75 and I will mail you a Brooder Heater and plans promptly.

Illustrated circular free.

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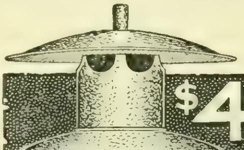
Route 360-B Elmira, N.Y.



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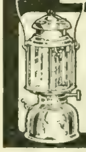

A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. **Agents wanted. Big Profits. Write for Catalog.** THE BEST LIGHT CO.
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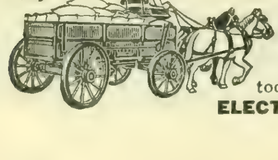

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High or low wheels—steel or wood—wide or narrow tires. Steel or wood wheels to fit any running gear. Wagon parts of all kinds. Write today for free catalog illustrated in colors.

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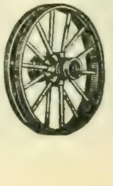

Beekeepers!

We urge you to place your orders for Bee Supplies NOW, and be prepared for the honey flow. We offer a complete line of Bee Supplies and we are positive that our prices will interest you. We make a specialty of manufacturing supplies for comb-honey production and will appreciate the opportunity of quoting you our special prices on quantities.

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Send us your name and address and we will send you a copy of our new illustrated catalog free.

August Lotz Company
BOYD, WISCONSIN

Hubam Clover

Northern Grown, Guaranteed
Pure, Scarified and with
INOCULATION

The important thing in growing a crop is inoculation. Ours is prepared by a state university's soil bacteriologist.

Buy 3 pounds of Hubam Clover Seed and Sow an Acre. Grow for honey, hay, green manure, or seed.

Price Effective Feb. 1, 1922.
3 pounds $3.75
1 pound 1.25
(Postpaid)
10 lbs. 10.00
(F. O. B. Medina.)

Order now to sow early.
Write for Hubam Booklet.

THE A. I. ROOT COMPANY
MEDINA, OHIO.
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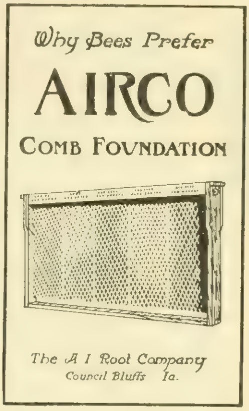
We want you to have this booklet

At No Cost



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This booklet is of unusual interest to beekeepers, as it tells of the long experiments conducted, in perfecting this New Process Foundation. It tells what the New Airco is, and in what way it is an improvement, a great forward step in better and more productive beekeeping. The service coupon or a postal card will bring the booklet to you free of charge, as well as a sample of Airco Foundation. Write today.

Airco will save you real money this season because the bees do take to it first.

We are milling Airco Foundation at Council Bluffs, Iowa. Let us quote on your season's need.

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Gentlemen:—Kindly send me your free booklet, "Why Bees Prefer Airco Comb Foundation."

I would be interested in getting your price on .... pounds of
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Name ....
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I Pay Transportation Charges on Package Bees

THREE BANDED

1-lb. package, including young three-banded queen	$4.50
2-lb. package, including young three-banded queen	6.00
3-lb. package, including young three-banded queen	7.50

25 cents per package less for twelve or more packages. Delivered to your address via parcel post. In comparing my prices with others, take in consideration you have no express charges to pay. Parcel post shipments go through quicker.

SELECT (one grade) untested queens, $1.50; six, $8.00; twelve, $15.00. Safe arrival of bees and queens, pure mating, and satisfaction guaranteed. Let me book your order now with ten per cent cash, balance just before shipping. Shipment will be made on the day you name. I have not yet disappointed a customer. No disease.

JASPER KNIGHT
HAYNEVILLE - - - ALABAMA

Package Bees
----AND----
Reliable Queens

GOLDEN AND THREE-BANDED ITALIANS

We are now in a position to accept orders for queens and bees for spring shipping in large quantities. We have the stock and experience necessary to handle your orders, whether large or small.

1-lb. Package with Queen	$3.00
2-lb. Package with Queen	5.00
3-lb. Package with Queen	7.00
Tested Queen 1, $2.50; six	12.00
Untested ....1, 1.25; six	7.00
Select Untest. 1, 1.50; six	8.00

We are in position to fill orders from 100 to 5000 queens or packages. Safe arrival and satisfaction guaranteed. Terms, 25% to book orders.

E. A. SIMMONS
GREENVILLE - - - - ALABAMA

Queens of Quality

from the famous Black Belt of Alabama, the section suited by nature to the production of queen bees. Three-banded Italians, bred for honey production, disease-resistance and gentleness. There is no disease in my neighborhood. Entire satisfaction guaranteed. Descriptive circular on request. Untested, $1.25; Tested, $2.00.

P. M. WILLIAMS, Ft. Deposit, Ala.

QUEENS

OUR OLD RELIABLE THREE-BANDED ITALIANS ARE HONEY GETTERS.

They are gentle, prolific, and very resistant to foul brood. Orders booked for one-fourth cash. Safe arrival guaranteed. Circular free.

PRICES APRIL 1st TO JULY 1st.

Untested	$1.25;	over 25, $1.00 each
Sel. Unt.	1.50;	over 25, 1.25 each
Tested	2.50;	over 25, 2.25 each
Selected Tested		3.00 each

See our Dec. and Jan. Advertisement.

JOHN G. MILLER
723 C Street, Corpus Christi, Texas.

Responsibility

We like to have our customers think of our stock, our shipping facilities and our treatment of their orders as RELIABLE. Not the best perhaps, but equal to any. A card will bring our circular. May we hear from you?

R. V. STEARNS
BRADY, TEXAS.

ITALIAN BEES AND QUEENS

COMB PACKAGES AND NUCLEI FOR 1922.

Backed by years of experience in building our apiaries to a high standard by breeding from the best; we are prepared to furnish bees and queens that satisfy, and solicit your orders guaranteeing safe arrival and satisfaction. Certificate of inspection accompanies each shipment. We have found from years of experience that bees shipped on comb invariably reach their destination in very best condition.

FULL WEIGHT PACKAGES. *EXTRA-STRONG NUCLEI.*

Booking orders now for shipment May 1, 1922. Terms: 20% cash with order.

2-lb. package with young Italian queen, 1 or more, $4.75; 12 or more, $4.40; 25 or more, $4.00
3-lb. package with young Italian queen, 1 or more, 6.25; 12 or more, 5.90; 25 or more, 5.50
3-frame nuclei with young Italian queen, 1 or more, 6.50; 12 or more, 6.15; 25 or more, 5.75

References: First National Bank, Bainbridge, Ga.; Maddox Commission Co., Bainbridge, Ga.; Apalachicola State Bank, Apalachicola, Fla. Members of: Florida State Beekeepers Association, Tupelo Honey Exchange, Wewahitchka, Fla.

M. L. NISBET & BRO.

Apiaries, Ranletts Ldg., Fla. **P. O. BAINBRIDGE, GA.**

QUEENS
Three-Band Italians

PACKAGE BEES

QUEENS
Silver Gray Carniolans

Orders booked with 25 per cent deposit, balance just before shipping. Deliveries start April 1st. Safe arrival guaranteed of bees within 5 days of shipping point, queens anywhere in U. S. A. or Canada. Circular free.

1-pound package	$2.00 each.	10 or more	$1.75 each
2-pound package	3.50 each.	10 or more	3.00 each
3-pound package	5.00 each.	10 or more	4.50 each
1 Untested queen	1.25 each.	10 or more	1.20 each
1 Select Untested queen	1.50 each.	10 or more	1.40 each
1 Tested queen	2.00 each.	10 or more	1.80 each
1 Select Tested	2.25 each.	10 or more	2.00 each

Write for prices in large lots.

Breeders, extra selected and tested for breeding $5.00 each

References by permission—First National Bank of San Jose; Security State Bank, San Jose, American Bee Journal, Hamilton, Ill.; Western Honey Bee, Los Angeles.

J. E. WING, 155 SCHIELE AVENUE, SAN JOSE, CALIFORNIA

BEES AND QUEENS

Mr. Beekeeper, if you want good quality, quick service, prompt attention, and perfect satisfaction, *TRY NORMAN BROS.'* pure three-banded Italian bees and queens. And see for yourself. We are going out to please our customers and to build up our business, and we know it will take honest dealing to do it. And we are going to send out just what we are advertising. Our bees are hardy, prolific, disease-resisting and honey gatherers. Orders booked with one-fourth down; balance before shipment is desired. Place your order with us. We ship when you want them.

Prices April and May.

	1	6	12	100
Untested Queens	$1.00	$5.50	$10.00	$72.00
Select Untested	1.20	6.50	12.00	90.00
Tested Queens	2.00	11.00	21.00	
Select Tested	2.50 each			

One 2-lb. package bees $3.75; 12 or more, $3.50 ea. Add prices of queens wanted.

We guarantee pure mating, safe arrival, free from all diseases, and perfect satisfaction in U. S. A. and Canada. Remember you take no risk when you deal with us. Isn't that enough said?

NORMAN BROS.' APIARIES

NAFTEL, ALA.

QUEENS—QUEENS—QUEENS

THREE-BAND ITALIANS ONLY.
AS GOOD AS CAN BE FOUND IN BEEDOM.

We know the demand of the beekeeper. He wants *very best queens*, with prompt, efficient service at prices that he can afford to pay. Our queens, service and prices meet these requirements. We have numerous reports from customers that have been more than pleased. Will begin booking orders March 1 for May and June deliveries. Never have had any contagious or infectious disease in our apiaries. Health certificate with each shipment. Circular free.

May and June—Untested: 1, $1.25; 12, $13.50; 25, $25.00. Select Untested: 1, $1.50; 12, $16.20; 25, $31.25. Select Tested: 1, $2.50; 12, $27.00; 25, $50.00.

Pure mating, satisfaction and safe arrival guaranteed in United States (proper) and Canada. No nuclei or package bees for sale. Our capacity is about a thousand queens per month.

Herman McConnell, Robinson, Illinois.

QUEENS - - QUEENS

Three-bands and Goldens, the thrifty kind. Safe arrival and satisfaction guaranteed. Queens only. Untested: 1, $1.50; 6, $7.50, 12, $13.50. Tested: 1, $2.50; 6, $13.00; 12, $24.50. Select Tested: 1, $4.00; 6, $22.00; 12, $41.50. Write for prices after July 1.

P. O. WATKINS,
CULLASAJA, NORTH CAROLINA.

CANDY FOR WINTER FEED

In winter bees sometimes starve with plenty of honey in the hive. Use candy and avoid this unnecessary loss. Put up in large paper plates weighing two pounds each. Write for price, also catalog of Bee Supplies.

H. H. JEPSON

182 Friend St. Boston, 14, Mass.

QUEENS

Three-banded Italian Queens that must please and give entire satisfaction. We do not claim to have the best, but do claim them to be as good. No disease, and pure mating guaranteed.

—Prices to July the 1st—

Untested, $1.25; 11 to 23, $1.10 each; 24 or more, $1.00 each. Tested, $1.60 each; 12 or more, $1.50 ea.

Nuclei

Two-fr. with untested queen...$5.50
Three-fr. with untested queen.. 7.50
Ten or more, 10 per cent less.

Cypress Bee Supplies

Hives, hive-covers, bottom-boards, supers, frames, foundation, etc. All supplies will be shipped from Coker, Ala.; all bees and queens from Crawford, Miss.

The Abston Apiaries
Crawford, Miss. Coker, Ala.

High Quality Queens

Our three-banded Italian Queens are reared from best stock under improved methods. We do not breed for quantity but breed for quality. This year we are better prepared with a larger outfit to take care of your orders. Safe arrival, prompt shipment and fullest satisfaction guaranteed. Book your order now for May and June delivery. Terms: 10% with order, balance before shipping time. Upon all orders received prior to April 1st a discount of 6% will apply, or if you prefer to send all cash with order deduct 10%.

Untested, $1.25 each, $13.50 per doz.; 25 or more, $1.00 each. Select untested, $1.50 each, $15.00 per doz.; 25 or more, $1.15 each. Select tested, $2.25 each. Queens clipped free on request.

FRANK BORNHOFFER
MT. WASHINGTON, OHIO.

Rosedale Apiaries

Route No. 2,
Alexandria,
Louisiana.

J. B. Marshall &
H. P. LeBlanc,
Proprietors.

Nucleus and package bees. Can fill all orders promptly.

2-frame nucleus, $3.75
3-frame nucleus, 4.50

Packages.

2 pounds bees, $3.75
3 pounds bees, 4.50
Add $1.00 for queen with package or nucleus.

No bee disease in territory,
Guarantee safe delivery.

¶ Mr. T. E. Spencer of Shell, Wyo., produced 249 pounds honey and increased to three colonies from 4 lbs. of Milam's bees. See Gleanings for December, 1920, pages 728-29.

* * * * * *

¶ I am once more prepared to supply a limited number of queens and 2-lb. packages of bees at following prices:

1 untested queen, $1.50; fifty or more, $1.25. 1 two-pound package, no queen, $4.25; fifty or more, $4.00. Add price of queen wanted.

* * * * * *

¶ Shipment begins first of May. 10% cash with order; balance just before shipment. Safe arrival guaranteed.

* * * * * *

¶ References—Moore National Bank, Moore, Texas; The A. I. Root Company of Texas, San Antonio, Texas.

* * * * * *

O. E. MILAM
MOORE, TEXAS.

We furnish colonies and nuclei of

Italian Bees

in hives and shipping boxes.

Tested Italian Queens........$2.00
Untested Italian Queens..... 1.50
Six Untested Italian Queens.. 8.00

—o—

A full line of Apiarian Supplies always in stock. Let us quote you. Price list on request.

—o—

Second-hand 60-lb. cans, 2 in a case, $0.30 a case.

—o—

I. J. STRINGHAM

GLEN COVE, N. Y.
Nassau County.

FOR MAY DELIVERY

One vigorous Italian queen, one frame of emerging brood, one pound bees. Price complete, f. o. b. Bordelonville, $5.00. Additional frames of broods, each, $1.00; additional pounds bees each, $1.00. Queen introduced and laying en route to yon. Safe delivery and satisfaction guaranteed. No disease, reference given. Orders booked one-fifth down, May delivery.

Read what this customer says:

> "Mr. Jes Dalton, Bordelonville, La. Enclosed is deposit on 2 packages for May delivery. The one package I got last spring increased to 14 colonies and gave me 85 pounds of comb honey. Respectfully, A. Russell Paul, Belvidere, N. J."

This shows what these balanced packages can do. And this:

> "St. Thomas, Virgin Islands, U. S. A. Mr. Jes Dalton, Bordelonville, La. Dear Sir: The 2 packages arrived last night and upon examination I found about a dozen dead bees in one and about 200 in the other; quite a bit of sealed brood, some eggs and small larvæ. Very satisfactory considering the length of the shipment. Both queens had laid en route and there was plenty of honey in the combs. Yours, Axel Holst."

This shipment went by rail via New Orleans and New York, thence by steamer via Porto Rico to the Virgin Islands; were in the case 24 days in August. How is this for delivery? If they survived this trip in good condition, they will go any place in the United States. Send for address of other satisfied customers. Be sure to mention Gleanings in Bee Culture when writing.

JES DALTON, BORDELONVILLE, LOUISIANA

LOOK

QUEENS OF QUALITY.
SWARMS OF BEES BY THE POUND FOR 1922.
THREE-BANDED ONLY.

Price of packages by express.

1-lb. package, $4.00 each; 6 up to 12, $3.90 each; 12 or more, $3.75 each. 2-lb. packages, $5.50 each; 6 up to 12, 5.25 each; 12 or more, $5.00 each. 3-lb. packages, $7.25 each; 6 up to 12, $7.00 each; 12 or more, $6.75 each. If wanted by express add 10 per cent extra.

Price of Queens.

Select untested, $1.50 each; 12 or more, $1.40 each. Select tested, $3.00 each; 12 or more, $2.75 each. Wings clipped on request. Pure mating of all queens is guaranteed. All of our queens are reared by experienced and expert queen-breeders, and the business management is under those having over thirty years' experience handling bees in a large way. Give us a trial order and you will be well satisfied with our prompt service and strain of bees. Every package or queen ordered is guaranteed to arrive in good condition and to give entire satisfaction. 10 per cent cash with order. Bees or queens shipped any day specified.

HAYNEVILLE APIARY CO.
Hayneville, Ala., U. S. A.

Light three-banded bees and queens for April, May and June delivery. We stand for stock, promptness, safe delivery, satisfaction and no disease. We want to please our customers.

All bees are shipped on Root Standard Hoffman frame, brood and honey, which means safe delivery, and equal to a pound of bees. Queens introduced laying en route.

2 pounds bees, no queen, $3.75. Add $1.00 for each additional pound of bees or frame emerging bees.

2-fr. nuclei well covered with young bees, $3.75 ea. Add $1.00 for each additional pound of bees or frame emerging bees.

The package that brings results—5 lbs. bees on two frames emerging bees, $8.00.

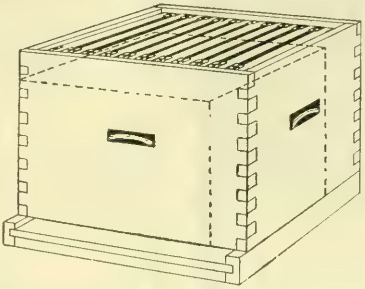
Queens for the above packages, $1.25 each; 5% discount on 20 or more packages; 15% with order; balance at shipping time.

+ + +

THE HOME OF GOOD QUEENS.
Oscar Mayeux.
Hamburg, Louisiana.

MODIFIED DADANT HIVE

Glance at the 11 frames, spaced 1½ inches from center to center, 11¼ inches deep of the Modified Dadant hive, giving adequate room for brood and stores in one hive body.



Note the outlines of the standard 10-frame Hoffman depth hive body compared to the Modified Dadant body. You can see why more swarms and less surplus come from small hives.

The Large Hive for Extracted Honey Production

Among the reasons why the Modified Dadant hive deserves a trial, especially where present equipment is not giving satisfaction are:

DEEP FRAMES, 11¼ IN.	**LARGE 1-STORY BROOD NEST**
FRAME SPACE VENTILATION	**ADEQUATE WINTER STORES**
SWARM CONTROL EASIER	**GREATER BROOD ROOM**
6¼-IN. EXTRACTING FRAMES.	**STANDARD COVERS, BOTTOMS**

Present equipment may be used as super equipment on Modified Dadant brood-chambers. Covers and bottoms for this hive are the familiar metal roof cover with inner cover and regular standard bottoms, except for larger dimensions.

THE STANDARD OF WORKMANSHIP IS "BEEWARE."

——Write for free Booklet on this hive to——

G. B. LEWIS CO., WATERTOWN, WIS. **DADANT & SONS, HAMILTON, ILL.**

There's a distributor near you.

Make the WEAK STRONG by using

Forehand's 3-Band

Italian Bees and Queens

Make your weak run-down colonies good ones by using young, vigorous 3-band Italian Queens, backed by 28 years of successful breeding. With the cost of supplies plus the cost of production, can you afford colonies occupying perfectly good hives and combs, netting you nothing or a small profit? We must produce our honey at less cost, to meet the lower prices. Can you make a better start than by bringing those non-producers to the front? Give them a queen that will have the hive chock-full of young bees ready for the harvest, instead of being in a weak condition when bees are needed most. Give my imported stock a trial. You risk not a penny; if you are not satisfied, notify me and I will replace or refund your money. If the colony is too weak for a queen alone, get one or two pounds of my Italian Bees with queen. Introduce to the old colony and watch them build up. Let me make you one of my satisfied customers. I have thousands of them in U. S. and Canada.

Untested—1, $1.50; 6, $7.50; 12, $13.50. Selected Untested—1, $1.75; 6, $9.00; 12, $16.50. Tested—1, $2.50; 6, $13.00; 12, $24.50. Selected Tested—1, $4.00; 6, $22.00; 12, $41.50. One pound bees, $2.75; two pounds bees, $4.75; three pounds bees, $6.75. If queen is wanted with bees add price. Write for prices on large lots.

N. FOREHAND - - RAMER, ALABAMA

CENTRALLY
LOCATED
TO
SERVE
NEW
ENGLAND
BEEKEEPERS.

Root QUALITY

BEE SUPPLIES

ORDERS
FILLED
PROMPTLY.
—
CATALOG
ON
REQUEST.

F. COOMBS & SONS, BRATTLEBORO, VERMONT

DON'T DELAY---GET OUR PRICES

WE SAVE YOU MONEY

"Falcon"

SUPPLIES --- QUEENS --- FOUNDATION

W. T. FALCONER MFG. COMPANY
FALCONER (Near Jamestown) NEW YORK
"Where the best beehives come from."

Price Reduction

The prices on our comb foundation mills have been reduced as follows:

		Old price	*New price*
Rolls	3 x 16	$400.00	$240.00
Rolls	2½ x 14	300.00	180.00
Rolls	2½ x 12	275.00	165.00
Rolls	2½ x 10	250.00	150.00
Rolls	2½ x 6	225.00	150.00
Rolls	2 x 10	200.00	120.00
Rolls	2 x 6	200.00	120.00

THE A. I. ROOT COMPANY
MEDINA, OHIO

MASON BEE SUPPLY COMPANY
MECHANIC FALLS, MAINE

From 1897 to 1922 the Northeastern Branch of The A. I. Root Company

PROMPT AND EFFICIENT SERVICE
BECAUSE—Only Root's Goods are sold.
It is a business with us—not a side line.
Eight mails daily—Two lines of railway.
If you have not received 1922 catalog send name at once.

Established 1885.
Write us for catalog.

BEEKEEPERS' SUPPLIES

ALWAYS ON TOP

The Kind You Want and the Kind That Bees Need

We have a good assortment in stock of bee supplies that are mostly needed in every apiary. The A. I. Root Co.'s brand. Let us hear from you; information given to all inquiries. Beeswax wanted for supplies or cash.

John Nebel & Son Supply Co.
High Hill, Montgomery Co., Mo.

Bee Supplies!

Our plant is especially equipped to manufacture dovetailed hives, supers, frames, sections and shipping cases.

We guarantee our goods to be first class in workmanship and material.

We carry a complete line of everything for the beekeeper.

DEALERS:—Write for our dealers' proposition.

Write for our new catalog.

A. H. RUSCH & SON CO.
REEDSVILLE, WIS.

He Doesn't Want a Pipe!

Jacksonville, Jan. 1, 1922.

The A. I. Root Co., St. Paul, Minn.

Naw! I don't want my *pipe!* And if I want my slippers, I can get them myself.

What I want is my bee supplies for the Honey Flow.

So I am going to order my bee supplies from you at St. Paul, where I can get 100% Quality and Service.

A trial order will convince anybody of their unexcelled service. They give special quotations on quantity lots, too.

JIM JACKSON,
Beekeeper.

Indianapolis Is the Town You Want to Think of When You Need Beekeepers' Supplies

Our stock is 90% new, which insures you of getting clean supplies. Write us for prices. Catalog for the asking.

The A. I. Root Company
873 Massachusetts Ave.
Indianapolis, Ind.

Italian Bees

BY THE POUND OR CARLOAD.

We are now booking orders for nuclei and pound packages, spring delivery. When you buy bees you want the most for your money, quality and service considered. With 25 years' experience in honey production, we now have bred a strain of bees that are honey gatherers, prolific and disease-resisting. We are offering at a reasonable price the fruits of our labors in pound packages, and nuclei with young queens, which have been found to be the best way for northern shipments. Testimonials prove this strain of bees are giving satisfaction in Canada, Mexico and the U. S. Our guarantee: No disease, safe delivery, satisfaction.

	April	May	June
1-fr. nucleus with queen.	$4.00	$3.50	$3.00
2-fr. nucleus with queen.	5.50	5.00	4.50
3-fr. nucleus with queen.	7.00	6.50	6.00
4-fr. nucleus with queen.	8.50	8.25	7.75

POUND PACKAGES WITHOUT QUEENS.

1 pound Italian Bees	$2.50
2 pounds Italian Bees	4.00
3 pounds Italian Bees	5.75

Add $1.50 for queen. 20% with order.

Weber Bros. Honey Co.
RIALTO, CALIF.

The Crowning Touch to the Home

It's just a house **until you plant a garden.** Then it becomes a **home**—a place where happiness can be found indoors or out—a living index to the character of those who live within. No wonder real home-makers give such care to planning beautiful gardens!

The choice of varieties is made easy for you by the S. & H. catalog. S. & H. ornamental shrubs are carefully selected, vigorous plants, with abundant foliage and finely colored bloom. All seeds listed are taken from unusually fine strains, proven by our own trials. S. & H. trees are preferred by professional nurserymen and orchardists all over the country. Nearly every thing you need for your garden is listed.

Be sure to send tonight for this interesting, splendidly illustrated catalog.

THE STORRS & HARRISON CO.
Nurserymen and Seedsmen
Box 162
PAINESVILLE, OHIO

HUBAM

THE NEW GIANT
HONEY CLOVER

A mass of white bloom until late autumn, heavy with A-1 honey. A summer-long paradise for bees.

Hubam produces an almost incredible yield of honey, and, being annual, saves a year in crop rotation. Sown with grain, it matures after harvest for forage, soiling or seed. Six times as much nitrogenous material for plowing down as Red Clover.

1 to 4 lbs. per acre in 30-in. drills gives big seed yield. Tremendous demand—and the honey is "velvet."

Our Hubam is scarified and certified to be from original Ames stock. Write for further information and prices.

May Seed & Nursery Co. Shenandoah Brand

May Seed &
Nursery Co.
1120 Elm Street
Shenandoah, Iowa

Honey and Hubam

The words are synonymous

The nectar flow is abundant. Comes early and stays until late fall. Makes water-white honey so coveted by honey producers. Also a boon to the orchardist, the stock raiser, the general farmer. Seed Sense, our monthly magazine, tells about it. Just say HUBAM to us and we'll put you on our list.

Buy your seed of this wonderful new annual white sweet clover early. Buy it from a well-established firm with a reputation for squareness. Price now is $2.00 per pound, for certified seed of our own growing.

With each and every order for Hubam we will include FREE a can of Nitragin pure culture bacteria which will insure proper growth of the Hubam plant.

HENRY FIELD SEED CO.
SHENANDOAH, IOWA.

Try Achord's Package Bees and Queens

THREE-BANDED ITALIANS ONLY.

We have the stock, equipment, and experience, and can give you prompt, satisfactory service. We have more than 1000 big, healthy hustling colonies of pure Italian bees to draw from. Write for illustrated price list.

W. D. ACHORD, FITZPATRICK, ALABAMA

BEES----ITALIAN BEES----BEES

We are booking orders for colonies, nuclei, and packages of Italian bees. The prices are as follows: Full colonies with Italian queen at $15.00; two for $25.00. 3-frame nucleus with Italian queen at $6.50; 3-lb. pkg. with Italian queen at $6.50. All combs are straight, wired, and built from full sheets of foundation. Orders filled in rotation. No disease. Our apiaries are state inspected. Safe arrival and satisfaction guaranteed.

VAN'S HONEY FARMS

VAN WYNGARDEN BROS., PROPS. HEBRON, INDIANA.

THREE-BANDED ITALIANS ONLY

BEES AND QUEENS.

I have a hardy prolific strain of bees and guarantee them to be pure and clean of disease; and they must reach you in good condition or I will make it good with you. I furnish an inspection certificate showing that they have been examined and found to be clean of diseases. We have never had any bee diseases in this part of the state. Untested Queens: 1, $1.25 each; 12, $1.10 each. Tested Queens: 1, $1.60 each; 12, $1.35 each. 1 one-frame nucleus, $4.00; 1 two-frame nucleus, $5.00. Nuclei are all furnished with untested queens at this price unless otherwise ordered.

H. L. MURRY, SOSO, MISSISSIPPI.

THREE-BANDED ITALIAN QUEENS WITH PACKAGE BEES AND NUCLEI.

All I have for sale are guaranteed to please. Can begin shipping April 20th. Health certificate and instructions accompany each package.

2-frame nucleus with untested queen	$5.00
2-frame nucleus with tested queen	5.50
2-fr. nuclei in doz. lots with untested queen	4.50
2-fr. nuclei in doz. lots with tested queen	5.00
2-lb. pkg. hybrid bees with untested queen	5.50
Twelve or more	5.00

25% deposit to book your order.

I have arranged for better railway service by shipping from Clarksville. Address all orders to

BAUGHN STONE, CLARKSVILLE, TEX.

INDIANOLA APIARY

is now booking orders for 1922 for Italian bees and queens. Write for price list and circular. No disease. Bees inspected by State inspector.

J. W. SHERMAN
Valdosta, Ga.

1922 ITALIAN QUEENS

Untested, $1.20 each, 12 or more, $1.00 each. Select Untested, $1.50. Tested, $2.00. No disease.

Package Bees Priced on Request.
D. W. HOWELL
Shellman, Ga., Box A3.

ROOT QUALITY BEES AND BEEKEEPERS' SUPPLIES.

Bees in the hive, in packages, and nuclei, three-banded leather-colored Italian queens. Let a beekeeper of long standing serve you in your requirements for 1922. Catalog on request.

O. G. RAWSON,
3208 Forest Place, East St. Louis, Illinois.

PATENTS Practice in Patent Office and Court. Patent Counsel of The A. I. Root Co.

Chas. J. Williamson, McLachlan Building,
WASHINGTON, D. C,

ROOT QUALITY QUEENS

SOMETHING ABOUT THEM.

Fifty years of continuous breeding up to the present Root Quality Queens and Bees. A. I. Root bought the first mother of this strain from Langstroth 55 years ago. No expense or pains has been spared to develop this strain of improved three-banded leather-colored Italians.

PRICES OF ROOT QUALITY QUEENS.

April 15 to June 30—

	1 to 9.	10 to 24.	25 to 49.	50 to 99.	100 or over.
Untested . .	$2.00 ea.	$1.80 ea.	$1.70 ea.	$1.60 ea.	$1.50 ea.
Sel. Untested	2.50 ea.	2.25 ea.	2.10 ea.	2.00 ea.	1.85 ea.
Tested	3.00 ea.	2.70 ea.	2.55 ea.	2.40 ea.	2.25 ea.
Sel. Tested.	3.50 ea.	3.15 ea.	3.00 ea.	2.80 ea.	2.60 ea.

July 1 to November 1—

	1 to 9.	10 to 24.	25 to 49.	50 to 99.	100 or over.
Untested . . .	$1.50 ea.	$1.40 ea.	$1.35 ea.	$1.25 ea.	$1.15 ea.
Sel. Untested	2.00 ea.	1.90 ea.	1.80 ea.	1.70 ea.	1.60 ea.
Tested	2.50 ea.	2.35 ea.	2.25 ea.	2.10 ea.	2.00 ea.
Sel. Tested . .	3.00 ea.	2.85 ea.	2.70 ea.	2.55 ea.	2.40 ea.

PRICES OF BEES IN COMBLESS PACKAGES BY EXPRESS.

April 15 to September 1—

C310700—1-pound package . . $3.00; 25 or more . . $2.85 ea.
C310800—2-pound package . . 5.00; 25 or more . . 4.75 ea.
C310801—3-pound package . . 7.00; 25 or more . . 6.60 ea.
Add price of queen wanted to package price given above.
Early deliveries will be made from our Alabama apiaries.

THE A. I. ROOT COMPANY, MEDINA, OHIO, U. S. A.

SUPERIOR ITALIAN
BEES AND QUEENS

With this guarantee, that is, if they are not entirely satisfactory, we want to replace them.

Untested queens to June 15: 1, $1.25; 10 or more, $10.00
Tested queens to June 15: 1, $2.00; 10 or more, $17.00

SPECIAL

For orders received this month for shipment from May 10 to June 1 we will make a special price on good, strong three-frame nuclei with queens.

PACKAGE BEES

One pound, with queen - - $4.00; 10 or more, $3.50
Two pounds, with queen - - 5.50; 10 or more, 5.00

THE STOVER APIARIES, MAYHEW, MISSISSIPPI

QUEENS---QUEENS

PACKAGE BEES AND NUCLEI

Read what a breeder from France wrote: "Queen received in fine condition; after being on the road 21 days, only three bees dead. Thank you very much for sending me a $100.00 queen for $5.00. I used her for a breeder, and every customer that bought her daughters has reordered for 1922. She is a wonder. I have bought dozens of queens from Italy, and she is ahead of them all. I have compared her bees with the best breeders of the country, and she is at the top."

1922 PRICES.
Booking Orders Now.
Safe Arrival Guaranteed.

1-lb. package	$2.25 each
25 or more	2.15 each
2-lb. package	3.75 each
25 or more	3.60 each
3-lb. package	5.25 each
25 or more	5.00 each
2-comb nuclei	3.75 each
3-comb nuclei	5.25 each
(Add price of queen wanted.)	
1 Untested Queen	$1.50 each
25 or more	1.30 each
1 Select Untested	1.70 each
25 or more	1.50 each
1 Tested	2.25 each
25 or more	2.00 each
1 Select Tested	2.65 each
25 or more	2.25 each

It is cheaper to pay a little more and get the best; they are hustlers, hardy, very resistant to European foul brood, etc., etc. Send for circulars. I ship thousands of pounds of bees every year all over the U. S. A. and Canada. One-fifth down with order; balance just before shipping.

THE NUECES COUNTY APIARIES
E. B. AULT, Prop. CALALLEN, TEXAS

THREE-BANDED QUEENS

BEES IN PACKAGES FOR 1922

After twenty-six years of select breeding we have a strain of Bright Three-banded Italian Bees that are unsurpassed for their disease-resisting (especially European foul brood) and honey-gathering qualities. Read what others say about them:

"Enclosed fined $75.00 for 50 queens. I want these for requeening colonies that have European foul brood as I find your strain resistant. One of the queens bought of you last season built up from a nucleus and made 360 pounds of surplus honey."—Pennsylvania.

"I find your bees gentle, best of workers, and they stand the long winters here fine."—Manitoba, Canada.

"The two-pound packages I got of you last year made an average of 150 pounds of surplus honey. I find your bees not only hustlers but also gentle."—Illinois.

"The one-pound packages bought of you made a surplus average of 175 pounds of extracted honey and an increase of 39%, which is as fine a record as can be had in this locality, especially when the work is done entirely by amateurs."—Pennsylvania.

"I am well pleased with the bees I got from you last year as they paid for themselves and made a nice profit."—Iowa.

Price List of Packages With Young Queens by Express.

1-lb. packages, $4.00 each; 12 or more, $3.75 each. 1½-lb. packages, $4.75 each; 12 or more, $4.60 each. 2-lb. packages, $5.50 each; 12 or more, $5.00 each. 3-lb. packages, $7.25 ea.; 12 or more, $6.75 ea. If packages are wanted by parcel post, add 10%.

Select untested queens, $1.50 each; 12 or more, $1.40 each. Select tested queens, $3.00 each; 12 or more, $2.75 each. Wings of queens clipped free of charge.

We guarantee our bees and queens to give absolute satisfaction and to arrive in perfect condition with the exception of those shipped by express to Canada. The largest packages we are able to ship by mail to Canada are our 1½-lb. Canadian Specials. Bees will be shipped promptly date named, 10% cash with order and the balance just before shipment.

M. C. BERRY & CO., BOX 697, MONTGOMERY, ALA., U. S. A.
WAS HAYNEVILLE, ALABAMA.

Give Us a Trial

We Ship When You Want Them.
We Will Book Only What We Know We Can Fill.

Italian Bees and Queens

of the best strain

1-pound Package, $2.30; 15 or more, $2.20 each.
2-pound Package, $3.75; 15 or more, $3.50 each.
3-pound Package, $5.25; 15 or more, $5.20 each.

Young Queens Only

Italian Queens a Specialty

Write Us Your Wants.

1 Selected Untested, $1.50; 12 or more, $1.20; 25 or more, $1.10. Queens are raised for us by queen specialist and selected by us for our trade. 20% down books your order.

No Disease *Quality* *Service*

Valley Apiaries

A. W. Bryson, Prop. ***La Feria, Texas***

QUEENS

NUCLEI AND PACKAGE BEES

PRICES.

Untested Queens	$1.10 each
Over 25, $1.00 each.	
Select Untested	$1.35 each
Over 25, $1.25 each.	
Tested, $2.00, Select Tested	$3.00 each
Breeders $7.50 and $10.00 each in one-frame nucleus.	

Nuclei.

2-fr. with young laying queen	$5.50 each
Over 10, $5.00 each.	
3-fr. with young laying queen	$7.25 each
Over 10, $6.75 each.	

Combless Packages.

One pound	$2.75 each
Over 10, $2.50 each.	
Two pound	$4.25 each
Over 10, $4.00 each.	
Three pound	$6.00 each
Over 10, $5.75 each.	

PURE THREE-BANDED ITALIANS ONLY

It costs less to keep really good bees than it does inferior ones; but the returns may be several times more from the good ones. If yours are black or hybrid you should Italianize. If your strain of Italians are not giving the results you think they should, why not try some of ours?

Don't tolerate old, failing queens that have seen their day. Of course the bees may supersede them but it may be too late to insure the colony building up in time for the flow.

Requeening with a superior strain, bred for business, is the surest way to get the utmost profit from your apiary. We are prepared to deliver the goods, and we accept only the business we can deliver on time. Ask for our folder, containing testimonials, prices, etc.

Guarantee: Freedom from disease. Health certificate, also permit (where necessary) with every shipment. Safe arrival and complete satisfaction. We make prompt replacement of all shipments that arrive in bad order. Have agent make notation on express bill and send us with claim. Proper provisioning and careful packing in strong light packages have prevented a single claim in two years past.

Terms: 20% to book, balance before shipment. Express on packages and nuclei. f. o. b. here unless quoted otherwise.

JENSEN'S APIARIES, RT. 3, CRAWFORD, MISS.

Completely Destroys the Weed Growth

More than that, the BARKER breaks the hardest crust into a level, porous, moisture-retaining mulch — all in the same operation.

A ten-year-old boy can run it—do more and better work than ten men with hoes. Saves time and labor, the two big expense items.

BARKER **WEEDER, MULCHER AND CULTIVATOR**

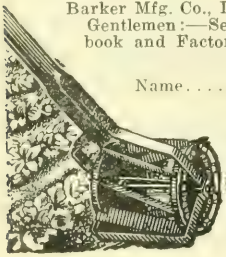
Eight reel blades revolve against a stationary underground knife—like a lawn mower. **BEST WEED KILLER EVER USED.** Works right up to plants. Cuts runners. Aerates the soil. Has leaf guards, and shovels, for deeper cultivation—3 *garden tools in* 1.

FREE ILLUSTRATED BOOK.

Tells how gardeners and fruit-growers everywhere are reducing their work; increasing their yields.—How to bring growing plants through a dry season.—How to conserve the moisture and force a larger, more rapid growth. Send TODAY for this free, illustrated book and special Factory-to-User offer.

BARKER MANUFACTURING CO.

Dept. 23. David City, Neb.



Barker Mfg. Co., Dept. 23, David City, Neb.
Gentlemen:—Send me postpaid your free book and Factory-to-User offer.

Name........................

Town................

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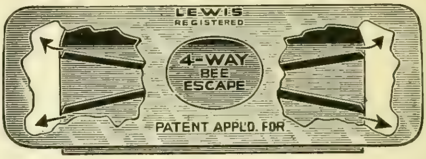
LEWIS 4-WAY BEE ESCAPES



Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal. Price each 18c. postpaid. Made by

G. B. Lewis Company, Watertown, Wis., U.S.A.

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NEW
STRAWBERRIES

Trade Mark

EVERBEARING STRAWBERRIES
$1000 per acre
Plants by mail, postp'd
SPECIAL OFFER

Our Selection Best Varieties for Home and Market

100 Plants - - $2.50
200 Plants - $4.25
300 Plants - - $6.00

Best Up-to-Date Standard Varieties

(Not Everbearing) (Our selection.)

100 Plants, $1.25; 200 Plants, $2.10, 300 Plants, $2.95. *Catalog Free.*

Only Best Varieties. Home of the Everbearers. Introducers of Progressive.

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A Standard, Guaranteed TYPEWRITER With Every Modern Writing Convenience

Write Today For Illustrated Circular Explaining Try-Before-You-Buy Plan

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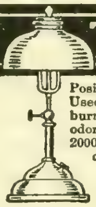

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THE BEST LIGHT CO.
306 **E. 5th St., Canton, O.**

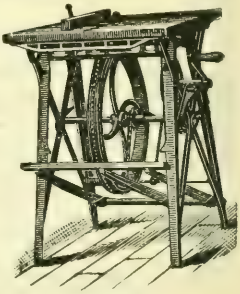
BARNES' HAND & FOOT POWER MACHINERY

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial

Send for illustrated catalog and prices.

W. F. & JOHN BARNES CO.
545 Ruby Street
ROCKFORD, ILLINOIS



QUEENS
Bright Three-banded Italians.

Announcement to Beekeepers

QUEENS
Bright Three-banded Italians.

We are now booking orders for queens for the season of 1922.

Shipments of queens this year will commence on March 15th, 1922.

All queens are mated in standard full-sized three-frame nuclei.

Our queens are bred on natural honey flows. No artificial flows used in breeding.

We are operating four thousand standard full-sized three-frame nuclei.

Capacity and output this season will be five thousand queens per month.

We own, operate and run for extracted honey in the states of California and Nevada twelve thousand colonies of bees. All of our breeders are selected queens whose colonies headed these twelve thousand colonies of bees last season.

Prices and Terms

Mated Untested Queens

1	$1.00
6	5.50
12	10.00

In larger quantity, 75c ea.

TERMS.

10% deposit on booking order. Balance at time of shipment.

Better selection of breeders cannot be equaled or had anywhere.

We have the capacity and output of queens to make shipments promptly as and when promised.

All queens shipped by us in six-hole mailing cages. No small-sized mailing cages used.

We guarantee safe arrival of queens. Any queen arriving dead at destination will be replaced without charge.

References by permission: The A. I. Root Company of California, No. 52 Main St., San Francisco, California, and No. 1824 East 15th Street, Los Angeles, California; The Western Honey Bee, No. 121 Temple Street, Los Angeles, California.

We respectfully solicit your patronage.

WESTERN BEE FARMS CORPORATION
(Principal)

WESTERN HONEY CORPORATION
WESTERN CITRUS HONEY CORPORATION
(Associated Corporations)

GENERAL OFFICES.
Claus Spreckels Building, No. 703 Market Street, San Francisco, California.

Thagard's Queens

Bred for Quality

We have spent years building up our strain of Three-banded bees. In doing so we have not bred altogether for color, but for the many other good qualities that you want in your queens. Our queens have proven this to thousands of beekeepers. We want you to try some of them, test them against any you may obtain anywhere, AND NOTE THE RESULTS. Our queens are bred from imported queens, mated to domestic drones; they are hardy, prolific, gentle, disease-resistant and honey-producers. Safe arrival, pure mating, prompt service and perfect satisfaction guaranteed. Write for descriptive catalog.

ITALIAN BEES

	1	6	12
Untested	$1.50	$7.50	$13.50
Sel. Untested	1.75	9.00	15.00
Tested	2.50	13.00	24.00
Sel. Tested	3.00	18.00	32.00

	1	25 or more
1-lb. package	$3.50	$2.75
2-lb. package	5.00	4.50

THE V. R. THAGARD COMPANY
GREENVILLE, ALABAMA.

A card will bring our 1922 catalog.

QUEENS

While gentleness and color are not lost sight of in breeding our queens, still the honey-getting quality of the bees is the most desirable feature. By selecting for prolificness and vigor, we have produced a strain that are splendid honey--getters.

Mr. W. A. Chrysler of Chatham, Ontario, one of the big fellows up there, writes: ''The queen I got from you in 1920 and a queen I raised from her, produced a little over four hundred pounds of honey each. There was not five pounds difference in them. They outdistanced any of the rest of our three hundred colonies by about 75 pounds.''

QUEEN PRICES.

Before August First		*After August First*	
1 to 4 inclusive	$2.50 each	1 to 4 inclusive	$2.00 each
5 to 9 inclusive	2.45 each	5 to 9 inclusive	1.95 each
10 or more	2.40 each	10 or more	1.90 each

Breeding Queens for the season, $10.00 each.

We still have a number of breeders that are not sold that can be delivered any time after April 1. We believe these are as good breeders as we have ever sold.

JAY SMITH, ROUTE 3, VINCENNES, IND.

"I've been pretty busy for the past two months. Been all over the United States, up in Canada, down in Mexico, Central America, the Canal Zone, Cuba and Jamaica. Made a few trips over to the British Isles and down in Italy and over to India. They even sent for me over in Australia and China.

"O, the distance doesn't count. The boss pays all the expenses and I enjoy the trips. You see it makes no difference how little you appreciate my visit or how much good it does you, you can't lose more than a postage stamp.

"I'd enjoy visiting your apiary too; I would visit it if I knew the way. I'll bring with me one of the handsomest booklets, that will give you some mighty good advice about buying bees and queens. There is something about selecting, breeding and building a strain of bees, too. There is lots more too, but you will find out about that when I bring the booklet.

"If you will just write a card to W. J. Forehand & Sons at Fort Deposit, Alabama, they will start me right off in the direction of your apiary. No, I hardly ever miss the way; if I do, just write the boss again.

"I want to visit the apiary of every real beekeeper this month. It doesn't make any difference if you've got one colony or five thousand. I want to see you before you place your order because I believe I can show you how to make some extra money with your bees during the coming season.

"I'd like to visit you next. Why not write the boss right away, and I'll be over just as quick as a pair of good, strong wings can take me?"

HUBAM

A Continuous Flow of Abundant White Honey

producing nectar until your bees stop flying.

Exceptionally low prices on lots for honey purposes.

Guaranteed against impurities until safe in your hands

Certified-Pedigreed Northern-grown

MICHIGAN
FARM BUREAU
BRAND
Quality-Purity-Service
SEEDS

Correspond Immediately for Particulars & Quotations

MICHIGAN STATE FARM BUREAU
BOX C-2 SEED DEPARTMENT BOX C-2
LANSING MICHIGAN

March Is A Good Month

----To order your Extracting Outfit.

Hives, extra hive-bodies, frames, AIRCO Brood Foundation, wire, etc. See catalog pages 5, 6, 7, 10, 17, 19 and 21.

----To order your Comb-Honey Outfit.

Hives, Supers, Sections, AIRCO Super Foundation, etc. See Catalog pages 5 to 9, and pages 15 to 19.

----To Order your Beginner's Outfit.

An order placed for an outfit this month will insure May delivery of bees. See catalog pages 58 to 61.

AND THEY ARE ALL

"Root Quality"

[That catalog for the asking.
We love to quote prices.
We want beeswax for cash or trade.]

M. H. HUNT & SON, LANSING, MICHIGAN
510 North Cedar St.

SEND FOR SAMPLES

Write today for free samples of

Airco Foundation

and

Root Sections

We want you yourself to judge Airco Foundation.

The wax in it, refined by our new process, in an immense vat, without the slightest contact with any acid, is the cleanest, strongest wax possible to have, and retains the full rich aroma of natural beeswax that the bees like. The making, done on our entirely new-plan type mills, gives the exact shape of the base of natural honeycomb, perfectly symmetrical sides of the base, with the walls braced as in natural comb. Instantly acceptable to bees.

We want you yourself to judge Root Sections.

The material in Root Sections is the highest quality No. 1 clear white-to-cream basswood lumber, free from all blemishes, carefully air-dried and cured in open sheds. Fifty years of experience is put into our buying and treatment of basswood. The workmanship is the most skillful we can hire. When you get your sample, note how accurate is the V-groove, and cut with flat bottom that prevents breakage. Polished on both sides in double surface sanding machines. The dovetailing fits clean and holds securely. It is the perfect section.

A Great Labor Saver

More comb honey is likely to be produced this year than in 1921. It is time now, if you use the old methods, to be folding the sections and fastening the foundation. But there is a way by which the foundation can be fastened so rapidly that it is not necessary to do this till the bees need the supers, thus giving the bees foundation fresh from the box. We have girls who fasten the foundation in sections at the rate of 2000 an hour by using our new Multiplex Foundation-Fastener. It's a wonder. See our Supply Catalog, page 20. Price for all-sized sections, $2.50.

THE A. I. ROOT COMPANY, MEDINA, OHIO

Branches at 23 Leonard St., New York City; 8-10 Vine St., Philadelphia; 224 W. Huron St., Chicago; 873 Massachusetts Ave., Indianapolis, Ind.; 290 E. Sixth St., St. Paul, Minn.; 10 Commerce St., Norfolk, Va.; 120 Bay St., Savannah, Ga.; 224 Poydras St., New Orleans; The A. I. Root Co. of Texas, San Antonio; The A. I. Root Co. of Iowa, Council Bluffs; The A. I. Root Co. of California, 1824 E. 15th St., Los Angeles, and 52-54 Main St., San Francisco; The A. I. Root Co. of Canada, Ingersoll, Ontario.

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Gleanings in Bee Culture

The Beauty and the Bees

VOLUME L APRIL, 1922 NUMBER 4

Bee Supplies

Send us your orders for your 1922 requirements NOW. We guarantee our goods to be first class in workmanship and material.

Special Prices on

Tin Honey Containers

5-lb. Pails, per 50	$ 3.75
5-lb. Pails, per 100	7.00
10-lb. Pails, per 50	5.50
10-lb. Pails, per 100	10.50
60-lb. Sq. Cans, per case of two	1.25

No. 2 Section Honey Boxes

50,000	4¼x4¼x1½	plain	$8.50 per 1000
25,000	4¼x4¼x1¾	beeway	10.00 per 1000

Write for our new Catalog.

A. H. Rusch & Son Co.

Reedsville, Wisconsin

Indianapolis Is the Town You Want to Think of When You Need Beekeepers' Supplies

Our stock is 90% new, which insures you of getting clean supplies. Write us for prices. Catalog for the asking.

The A. I. Root Company

873 Massachusetts Ave.
Indianapolis, Ind.

1922 Bees and *1922* Queens of Quality

Get your orders in early.

3000 Nuclei headed with young Italian Queens ready to serve you on early spring orders.

April, May and June

Untested Queens	$1.50;	25 to 99, $1.30
Sel. Untested Queens	1.75;	25 to 99, 1.50
Tested Queens	2.25;	25 to 99, 2.00
Select Tested Queens	2.75;	25 to 99, 2.25

July to November

Untested Queens	$1.25;	25 to 99, $1.00
Sel. Untested Queens	1.50;	25 to 99, 1.25
Tested Queens	2.00;	25 to 99, 1.50
Select Tested Queens	2.25;	25 to 99, 2.00

Write for prices on 100 or over.

1 1-frame Nucleus with Tested Breeding Queen	$10.00
1-pound Package Italian Bees	$2.25
2-pound Package Italian Bees	3.75
3-pound Package Italian Bees	5.25

Quantity prices on application.

Safe arrival and satisfaction guaranteed to any point in the United States.

THE A. I. ROOT CO. OF TEXAS

BOX 765, SAN ANTONIO, TEXAS.

QUALITY
TIN CANS
FIRST
For PACKERS and MANUFACTURERS of FOOD PRODUCTS
LARGE CAPACITY
LONG EXPERIENCE
YOUR INQUIRIES SOLICITED
W. W. BOYER & CO. INC.
BALTIMORE, MD.

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Entered as second class mail matter at the Postoffice at Medina, Ohio. Published monthly.
Space occupied by reading matter in this issue, 52.8 per cent; advertising, 47.2 per cent.

THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

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C. H. W. Weber & Co.
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We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *We pay the highest cash and trade prices for beeswax.*

Write for free illustrated catalog today.

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Texas Beekeepers should write to A. M. Hunt, Goldthwaite, Texas.

"SUPERIOR FOUNDATION

"BEST BY TEST"

Do not fail to secure our 1922 reduced prices on
SUPERIOR FOUNDATION. State quantity desired.

We also manufacture Hoffman frames, dovetailed beehives, etc.
Quality unexcelled; prices on request.

SUPERIOR HONEY COMPANY, OGDEN, UTAH
(Manufacturers of Weed Process Foundation.)

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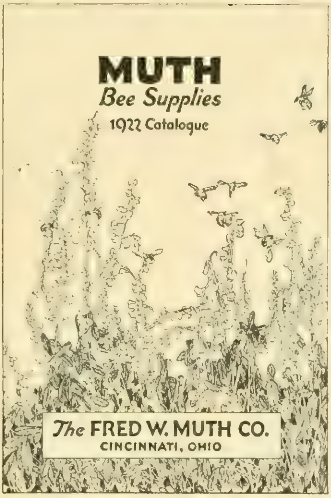

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Bee Supplies
1922 Catalogue

The FRED W. MUTH CO.
CINCINNATI, OHIO

You need our new 1922 bee supply catalog more than ever before. Have you received one? Many new articles are listed for the saving of labor and greater honey production. Our attractive prices, superior quality and prompt service will always be appreciated by beekeepers.

Send a list of your
requirements to us.

THE FRED W. MUTH COMPANY,
Pearl and Walnut Streets,
Cincinnati, Ohio.

Look Before You Leap!

Send in a list of your needs of BEE SUPPLIES for the coming season and get quotations on it.

1922 CATALOG, illustrated, now ready! MONDENG'S bee supplies speak for themselves.

CHARLES MONDENG
146 Newton Ave. N. and
159 Cedar Lake Rd.
MINNEAPOLIS, MINNESOTA.

Established 1885.
Write us for catalog.

BEEKEEPERS' SUPPLIES

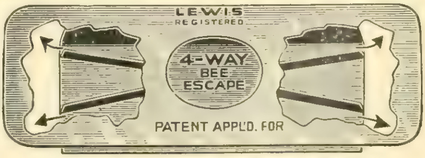
ALWAYS ON TOP

The Kind You Want and the Kind That Bees Need

We have a good assortment in stock of bee supplies that are mostly needed in every apiary. The A. I. Root Co.'s brand. Let us hear from you; information given to all inquiries. Bees wax wanted for supplies or cash.

John Nebel & Son Supply Co.
High Hill, Montgomery Co., Mo.

LEWIS 4-WAY BEE ESCAPES



Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal. Price each 18c prepaid. Made by

G. B. LEWIS COMPANY, Watertown, Wis., U. S. A.
For Sale by all Dealers.

HONEY MARKETS

U. S. GOVERNMENT MARKET REPORTS.

Information From Producing Areas (First Half of March).

CALIFORNIA POINTS.—A bumper honey crop is looked for, although the season may be late on account of cold weather. Some plant species in southern California have been in bloom for several weeks. Bees are active. Supplies are light, the demand very limited. The market is largely nominal, with few recent sales. Quotations f. o. b. California points, for eastern shipment, in less-than-carlots or pooled carlots, follow: White orange blossom 11c, light amber sage 8c, extra light amber sage 8½c, light amber alfalfa 6¾-7c. Little demand is reported for beeswax, which is selling lightly at 22c cash or 25c in trade.

INTERMOUNTAIN REGION.—Heavy losses are feared due to continued cold. Many colonies short of stores. Supplies of many beekeepers are practically exhausted. The best grades of white alfalfa and sweet clover honey in 5-gal. cans are being sold at 8-8½c per lb. in carlots and at 9-10c in less-than-carlots. Carlots of fancy and No. 1 white comb have been sold at $3.50-3.75 per 24-section case, with less-than-carlots moving at $4.00 per case. A few beekeepers are selling white extracted to near-by dealers in carlots and less as low as 7½-7¾c per lb. Inquiry still active, but many sales held up because of high freight rates to eastern markets. The beeswax market remains at 20-26c per lb. for average yellow.

PACIFIC NORTHWEST.—Present indications are for a rather heavy winter loss. Supplies of honey very light. Light alfalfa and sweet clover reported selling in 5-gal. cans at rather wide range in prices, 8-12½c per lb.

TEXAS POINTS.—Severe weather early in the month killed the early bloom in many sections, thus depriving bees of much-needed pollen. Hackberry is budding and prospects are bright for a good flow from mesquite. Recent rains have improved crop outlook, which long-continued drought and cold had rendered uncertain. Very little honey reported left in hands of beekeepers. Light amber extracted sold in a small way at 8½-10c in 60-lb. cans. Beekeepers are receiving 20-24c in cash per lb. for beeswax.

EAST CENTRAL AND NORTH CENTRAL STATES.—Colonies have come through the winter so far with little loss where sufficiently protected. Honey plants in northern part were generally well covered with snow during winter, but crop prospects are less favorable in southern section on account of limited snowfall. Demand shows some improvement, but movement still rather slow. Considerable dark honey still on hand, but white clover cleaning up fairly well. Carlots of white clover extracted quoted around 9½c per lb. at shipping point, with sales of 5-gal. cans in less than-carlots ranging 9½-13c, mostly around 12c per lb. Amber grades have sold 7½-10c per lb. in 60-lb. cans, with some sales of dark stock reported low as 5½c. Large amounts extracted white clover sold in Michigan direct to consumers at 25c per lb. in 10-lb. pails and at 22½c per lb. in 5-lb. tins.

PLAINS AREA.—Bees in outdoor stands had good flight days in the month. Crop prospects not favorable due to lack of moisture during the winter and reduction in alfalfa acreage. Honey is largely out of producers' hands. A little white clover extracted in 60-lb. cans brought 12-12½c per lb. Beeswax was sold at 25-26c per lb.

NORTHEASTERN STATES.—Bees are generally reported to have come through so far with very little loss. The outlook for the new crop is good, as clover fields in most sections have been covered with snow. Buckwheat has been selling in carloads in 160-lb. kegs and 60-lb. cans at 7c per lb. and 8-9c per lb. in less-than-carlots. Small lot sales of white clover in 60-lb. cans reported at 10½-13c per lb.

SOUTHERN STATES.—Unusually cold weather has checked the brood-rearing and nectar secretion. Bees said to be more dormant than for any season in 10 years. Shipments of package bees will therefore be later than usual. Much extracted honey still on hand in Alabama and Georgia.

WEST INDIES.—Prices in Cuba have advanced to 4¾c per lb f. o. b. Quotations delivered to Holland have been received at 57c per gal., including cost and freight. Reports have been received that a considerable quantity of Porto Rican as well as South American honey has gone to foreign markets, notably Holland, at prices higher than the shippers can realize in the United States.

Telegraphic Reports from Important Centers, March 14.

BOSTON.—Demand and movement slightly improved for extracted honey. Market steady for West Indian stock, slightly weaker for California. Comb: Sales to retailers, New York, 24-section cases No. 1 white clover $6.50-7.00. Vermont, 20-section cases carton stock No. 1 white clover $6.50-7.00. Extracted: Sales to confectioners and bottlers, California, white sage 13-14½c per lb. Brokers' quotations in either straight or pooled cars, delivered Boston basis, per lb., California, white sage 12c, light amber 8-9c, amber 7-7½c.

CHICAGO.—Demand and movement very slow. market weak; prices have changed but slightly during past two weeks. Extracted: Sales to bottlers, bakers and candy manufacturers, Colorado. Montana and Wyoming, alfalfa white 10-11c, light amber 9-9¾c, dark amber mostly 8c. Michigan and Wisconsin, white clover 11-12c. Comb: Sales to retailers, Colorado and Montana, 24-section cases best clover and alfalfa $4.75-5.00, poorer low as $3.50. Beeswax: Demand and movement moderate, market about steady. Sales to wholesale druggists, shoe manufacturers and harness-makers, Colorado and California, best 30-31c, poorer 24-26c.

NEW YORK.—Domestic receipts limited, foreign receipts moderate. Supplies moderate. Demand moderate, movement limited, market steady. Extracted: Spot sales to jobbers, wholesalers, confectioners, bakers and bottlers, California, light amber alfalfa mostly 7c, light amber sage 9-10c, white sage 11-12c. white orange blossom 12-14c. Intermountain Region, white sweet clover 10½-11c. New York white clover mostly 10-11c, buckwheat 7-8c, South American, refined, best 65-68c, poorer low as 60c per gal. Beeswax: Foreign receipts limited. Supplies rather limited. Demand moderate, market steady. Spot sales to wholesalers, manufacturers and drug trade, South American and West Indian, crude light best 21-23c, few 24c, poorer low as 18c, dark 14-15c. African, dark mostly 15-16c.

ST. LOUIS.—Supplies generally moderate. Demand and movement fairly good, market steady. prices practically unchanged. Comb: Sales to wholesalers in 24-section cases, Colorado, white alfalfa and clover No. 1 heavy $6.25. Sales direct to retailers in small lots, Colorado, white alfalfa and clover No. 1 heavy $6.75. Extracted: Small lots sales in 5-gal. cans direct to retailers, per lb., California, light amber alfalfa 10-11c. Southern light amber various mixed flavors 10c. Beeswax: Nearby and southern, average quoted on sales to jobbers, 23c per lb.

From Producers' Associations.

The demand for extracted honey has improved quite a little of late, and it looks now that strictly first-class bottling stock would be all cleaned up before another crop comes on. There is still some comb honey on hand in carload lots throughout the Inter-Mountain region, but there is very little interest shown by jobbers in comb honey. Losses in bees through Wyoming and Montana are likely to be quite heavy.

The Colorado Honey Producers' Assn.,
Denver, Colo. F. Rauchfuss, Secy.

Buyers are manifesting considerable interest in extracted honey but hesitate to pay our price of 8½c per lb. There is no interest shown in comb honey. There was practically no winter loss in bees except in one of our districts which reported an abnormally heavy loss.

Idaho-Oregon Honey Producers' Assn.,
Caldwell, Idaho. P. S. Farrell, Secy.

Honey retails at 15c per pound in 5 and 10 lb. containers. The few sales that have been made in larger lots have been for 8c, 60-lb. basis. The condition of the bees and the honey plants is somewhat improved. Severe cold snaps the first of the month stopped brood-rearing; but, as the cold was accompanied by rain, the general outlook for a honey crop is much better than a month ago.

Texas Honey Producers' Assn.,
San Antonio, Texas. E. G. LeStourgeon, Mgr.

CUBA.—Honey is 48c a gallon; wax, 21c a pound.
A. Marzol.
Matanzas, Cuba, March 9.

The A. I. Root Company's Quotations.

We are in the market for one carlot of white clover honey, for which we will pay 11 cents cash f. o. b. Medina. Samples to be submitted. We are not in the market for any other honey.

No shipments of honey will be accepted under any conditions except as ordered by our purchasing department.

Medina, Ohio. The A. I. Root Company.

The Opinions of Honey Producers Themselves as Reported to Gleanings in Bee Culture.

Early in March we sent to actual honey producers and some associations the following questions:

1. What portion of the 1921 crop, if any, is still in the hands of producers in your locality? Give answer in per cent.
2. What price are producers receiving at their station when sold in large lots? (a) Comb honey? (b) Extracted honey?
3. What are prices to retailers in small lots? (a) Comb honey per case, fancy or No. 1? (b) Extracted honey in five-pound pails or other retail packages?
4. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair, rapid.
5. What is the per cent of winter loss of bees, if any, in your locality?
6. What is the condition of the bees at present as compared with normal? Give answer in per cent. (a) As to strength of colonies? (b) As to amount of stores?
7. What is the condition of the honey plants at this time, compared with normal? Give answer in per cent.

The answers as returned by our honey and bee reporters are as follows:

State.	Reported	Crop Unsold.	In large lots.		To Retailers.		Movement.	Winter Loss.	Colonies.		Plant Condition.
			Comb.	Extr.	Comb.	Extr.			Str'gth.	Stores.	
Ala.	J. M. Cutts	15		$.08		$.60	Slow	0	125	125	125
Ala.	J. C. Dickman	8	$5.75	.09		.90	Fair	5	90	75	100
Ark.	J. Johnson	15			$4.80		Fair	2	100	100	100
B. C.	W. J. Sheppard	2		.28		1.75	Fair	10	100	100	100
Cal.	L. L. Andrews				6.00	.75	Fair	20	100	60	100
Cal.	G. Larinan			.11			Fair	5	100	100	100
Cal.	M. A. Sayler	5			3.60	.75	Fair	5	100	100	100
Colo.	J. A. Green	5		09	4.60	.60	Fair		100	85	100
Colo.	J. H. Wagner	8	3.55	.11	4.10	.75	Fair	0	100	110	100
Colo.	B. W. Hopper	0					Slow	2	90	80	90
Conn.	A. Latham	5			7.50		Rapid	1	110	100	100
Conn.	A. W. Yates	0					Fair		100	100	100
Fla.	H. Hewitt	1		.10		.85	Slow	2	100	100	125
Fla.	W. Lamkin	2				.75	Fair		90		100
Fla.	C. C. Cook	12		.10		.75	Fair	3	100	100	100
Ga.	J. J. Wilder	40		.11		.75	Fair	5	100	100	100
Ida.	J. E. Miller	0		.10		.55					
Ill.	A. L. Kildow	1					Rapid	1	110	98	100
Ind.	T. C. Johnson				6.00	1.00	Slow	0	100	100	100
Ind.	E. S. Miller	30			6.00	1.00	Fair	10	100	90	90
Ind.	J. Smith	0			8.50		Fair	25	75	50	100
Iowa.	F. Coverdale	1					Slow	15	105	70	80
Iowa.	E. G. Brown	10		.11	5.00	.80	Fair				90
Iowa.	W. S. Pangburn	20		.14		.85	Slow		100	100	
Kan.	J. A. Nininger				6.00	.75	Slow	0	100	85	100
Ky.	P. C. Ward	10					Slow	0	100	100	100
La.	E. C. Davis	15		.08		.75	Fair	0	125	100	100
Me.	O. B. Griffin	7			6.00		Slow	0	85	80	90
Md	S. G. Crocker, Jr.	5	5.50		5.75	1.00	Slow	7	95	100	100
Mass.	O. M. Smith	0					Slow	5	100	100	100
Mich.	F. Markham	5		.12		.80	Slow	0	100	125	100
Miss.	R. B. Willson	10		.08		.85	Slow	2	100	125	100
Mont.	R. A. Bray	20	5.25	.11	6.00	.95	Fair	5	95	95	
Mo.	J. W. Romberger	0	5.60	.11	6.25	.95	Fair	10	80	50	50
N. C.	C. S. Bumgarner						Slow	10	90	90	110
N. Y.	G. B. Howe					1.25	Rapid		100		
N. Y.	F. W. Lesser	0	4.80			1.00	Slow	0	100	100	80
N. Y.	Adams & Myers				6.00	1.00	Fair	0	100	75	50
Ohio.	E. G. Baldwin	5						1	105	105	
Ohio.	J. F. Moore	5		.12	4.50	.85	Fair	5	90	90	90
Ohio.	R. D. Hiatt	5			6.00	1.10	Fair		95	90	
Okla.	J. Heueisen	0					Rapid	3	95	25	100
Okla.	C. F. Stiles	0					Slow	10	90	80	100
Ore.	E. J. Ladd	5			5.50	1.00	Slow	10	50	25	100
Ore.	H. A. Scullen	9				1.00	Fair	10	90	75	80
Pa.	H. Beaver	3			3.00	.65	Fair		90	90	100
Pa.	G. H. Rea				7.00	1.00	Fair	10	100	100	100
Pa.	D. C. Gilham	8			7.00	1.00	Fair	5	95	90	120
S. C.	A. S. Conradi	0			6.00		Fair		95	95	100
S. D.	L. A. Syverud				3.75	.65	Fair	10	85	85	95
Tex.	T. A. Bowden	10				.75	Slow		90	100	85
Tex.	J. N. Mayes	0						2	90	80	50
Tex.	H. B. Parks	10		.08		.65	Slow	3	90	90	85
Utah.	N. E. Miller	1		.10			Fair				
Utah.	M. A. Gill	0					Rapid	20	75	80	100
Vt.	J. E. Crane	0				1.25	Fair		100		
Va.	L. N. Gravely	0	4.80			1.00	Slow	0	98	95	95
Wash.	W. L. Cox	0		.12	6.00	.75	Fair	30	80	75	85
Wash.	G. W. York	25		.09	6.00	.65	Slow	35	75	50	100
Wash.	G. W. B. Saxton	30		.12		1.10	Slow	10	75	90	100
W. Va.	T. K. Massie	0						0	90	85	100
Wis.	F. Hassinger, Jr.	3				.85	Slow				
Wis.	H. F. Wilson	2		.14		1.05	Rapid	10	100		
Wyo.	A. D. Brown	40			5.75	.75	Slow	20	75	50	105

For Real Success You Should Buy

Woodman's Inner Overcoat Hives

BEE CAUSE:

1. **Protected Bees work day and night.** It has been shown by careful observation that maintaining a temperature of 98 degrees permits comb-building to go on **both day and night.** The bees will thus devote more daylight time to gathering honey.
2. **Larger Honey Crops are assured.** The bees are enabled to rear brood earlier in the spring, with no danger of chilled brood on account of cold snaps. One bee in March is worth one hundred in July.
3. **You will practically eliminate winter losses.** With your colonies in normal condition (that is, with plenty of good stores, a young queen and young bees) you will be able to winter practically 100%.
4. **The Inner Overcoat Hive will last a lifetime,** as the outer hive walls are the same thickness as in the single-wall hive. In other words, WOODMAN Inner Overcoat Hives are a lifetime investment—not an expense.
5. **Out-of-door Wintered Bees have many advantages** over cellar-wintered bees. They do not spring-dwindle and are stronger at the opening of honey flow.
6. **Insures Close-up Protection.** A person may have any amount of blankets fastened up to the wall of his room and still freeze to death if left in the center of the room without **close-up protection or insulation. The close-up protection in the Inner Overcoat Hive is what does the trick.**

Special circular on WOODMAN'S Protection Inner Overcoat Hive, showing 10 large illustrations, sent on request.

WOODMANS FAMOUS BEE-WARE

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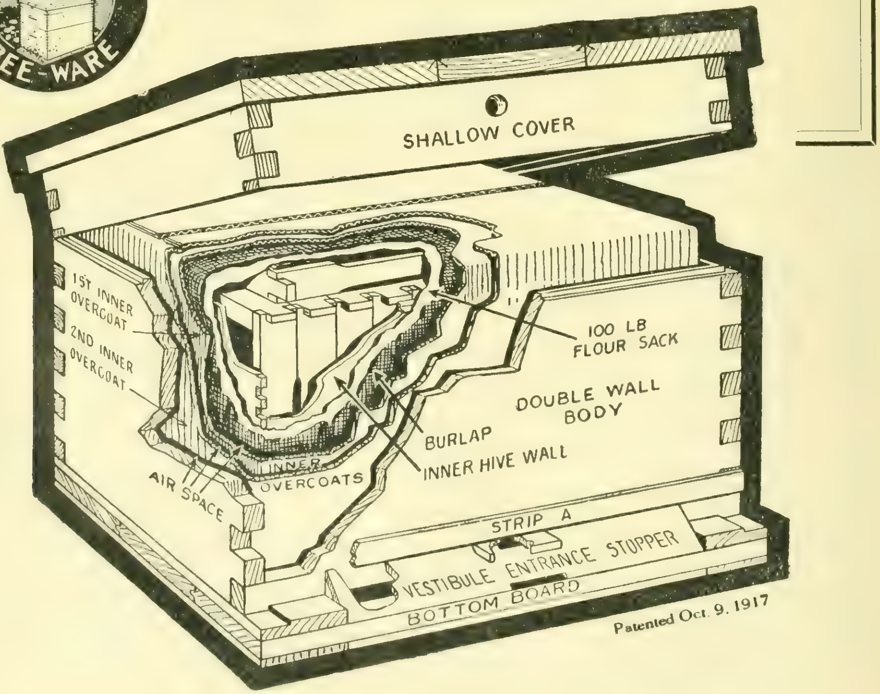
Sole Makers
238 Scribner Ave., N. W., Grand Rapids, Mich.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One-Story Complete Dovetailed Hive

With metal telescope cover, inner cover, reversible bottom, Hoffman frames, nails, rabbets.

Standard Size.

Crate of Five, K. D., 8-frame	$12.65
Crate of five, K. D., 10-frame	13.25

Jumbo Size.

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With Hoffman frames, nails, rabbets.

Standard Size, crate of five, K. D., 8-frame	$5.20
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Standard Size	100,	$5.20;	500,	$25.00
Shallow	100,	4.30;	500,	21.00
Jumbo	100,	5.80;	500,	28.00

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Diamond Brand Foundation

Medium	5 lbs.,	68c lb.;	50 lbs.,	65c lb.
Thin Super	5 lbs.,	75c lb.;	50 lbs.,	72c lb.

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We carry Aluminum Honeycombs as now made by Duffy-Diehl Company, in stock to supply Eastern Beekeepers.

Standard Langstroth	$5.00 box of 10
Shallow Extracting	4.00 box of 10
Jumbo	6.00 box of 10

HOFFMAN & HAUCK, INC.
WOODHAVEN, NEW YORK

MR. SAMPLE

is on the road for us, ready to call, and show you Root money-saving devices and supplies.

HAVE you seen the new Airco foundation? It will save you money. Let him explain.

THE V-groove Root Section is a wonder. You can't afford to use any other. He will tell you **just** why.

GLEANINGS in Bee Culture, the most practical and useful paper of its kind, is still one dollar for 12 issues. Mr. Sample would delight in showing you this Beekeeper's magazine.

INDEED, if you want quotation on Root's Guaranteed Bee Supplies, we'll be pleased indeed to give a detailed description of any Root "Quality" Bee Supplies, and quote the most attractive prices. It will pay you well to investigate carefully all quality guarantees.

IF you want Mr. Sample to call, let us know. He is ready to serve you.

Send Mr. Sample to me, please with,

☐ Your new Airco, and quotation on............lbs.

☐ The Root V-groove sections, and price on.................

☐ Gleanings in Bee Culture, with your special clubbing offers.

☐ Hoffman frames.................... ☐ ....

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PROMPTLY.
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THE HOME OF THE HONEY-BEE MEDINA, OHIO

ROOT QUALITY QUEENS

SOMETHING ABOUT THEM.

Fifty years of continuous breeding up to the present Root Quality Queens and Bees. A. I. Root bought the first mother of this strain from Langstroth 55 years ago. No expense or pains has been spared to develop this strain of improved three-banded leather-colored Italians.

PRICES OF ROOT QUALITY QUEENS.

April 15 to June 30—

	1 to 9.	10 to 24.	25 to 49.	50 to 99.	100 or over.
Untested ..	$2.00 ea.	$1.80 ea.	$1.70 ea.	$1.60 ea.	$1.50 ea.
Sel. Untested	2.50 ea.	2.25 ea.	2.10 ea.	2.00 ea.	1.85 ea.
Tested	3.00 ea.	2.70 ea.	2.55 ea.	2.40 ea.	2.25 ea.
Sel. Tested.	3.50 ea.	3.15 ea.	3.00 ea.	2.80 ea.	2.60 ea.

July 1 to November 1—

	1 to 9.	10 to 24.	25 to 49.	50 to 99.	100 or over.
Untested ...	$1.50 ea.	$1.40 ea.	$1.35 ea.	$1.25 ea.	$1.15 ea.
Sel. Untested	2.00 ea.	1.90 ea.	1.80 ea.	1.70 ea.	1.60 ea.
Tested	2.50 ea.	2.35 ea.	2.25 ea.	2.10 ea.	2.00 ea.
Sel. Tested..	3.00 ea.	2.85 ea.	2.70 ea.	2.55 ea.	2.40 ea.

PRICES OF BEES IN COMBLESS PACKAGES BY EXPRESS.

April 15 to September 1—

C310700—1-pound package..$3.00; 25 or more..$2.85 ea.
C310800—2-pound package.. 5.00; 25 or more.. 4.75 ea.
C310801—3-pound package.. 7.00; 25 or more.. 6.60 ea.

Add price of queen wanted to package price given above.

Early deliveries will be made from our Alabama apiaries.

THE A. I. ROOT COMPANY, MEDINA, OHIO, U. S. A.

SUPERIOR ITALIAN
BEES AND QUEENS

With this guarantee, that is, if they are not entirely satisfactory, we want to replace them.

Untested queens to June 15: 1, $1.25; 10 or more, $10.00
Tested queens to June 15: 1, $2.00; 10 or more, $17.00

SPECIAL

For orders received this month for shipment from May 10 to June 1 we will make a special price on good, strong three-frame nuclei with queens.

PACKAGE BEES

One pound, with queen - - $4.00; 10 or more, $3.50
Two pounds, with queen - - 5.50; 10 or more, 5.00

THE STOVER APIARIES, MAYHEW, MISSISSIPPI

QUEENS---QUEENS

PACKAGE BEES AND NUCLEI

Read what a breeder from France wrote: "Queen received in fine condition; after being on the road 21 days, only three bees dead. Thank you very much for sending me a $100.00 queen for $5.00. I used her for a breeder, and every customer that bought her daughters has reordered for 1922. She is a wonder. I have bought dozens of queens from Italy, and she is ahead of them all. I have compared her bees with the best breeders of the country, and she is at the top."

1922 PRICES.

Booking Orders Now.
Safe Arrival Guaranteed.

1-lb. package	$2.25 each
25 or more	2.15 each
2-lb. package	3.75 each
25 or more	3.60 each
3-lb. package	5.25 each
25 or more	5.00 each
2-comb nuclei	3.75 each
3-comb nuclei	5.25 each
(Add price of queen wanted.)	
1 Untested Queen	$1.50 each
25 or more	1.30 each
1 Select Untested	1.70 each
25 or more	1.50 each
1 Tested	2.25 each
25 or more	2.00 each
1 Select Tested	2.65 each
25 or more	2.25 each

It is cheaper to pay a little more and get the best; they are hustlers, hardy, very resistant to European foul brood, etc., etc. Send for circulars. I ship thousands of pounds of bees every year all over the U. S. A. and Canada. One-fifth down with order; balance just before shipping.

THE NUECES COUNTY APIARIES
E. B. AULT, Prop. CALALLEN, TEXAS

THREE-BANDED QUEENS

BEES IN PACKAGES FOR 1922

After twenty-six years of select breeding we have a strain of Bright Three-banded Italian Bees that are unsurpassed for their disease-resisting (especially European foul brood) and honey-gathering qualities. Read what others say about them:

"Enclosed find $75.00 for 50 queens. I want these for requeening colonies that have European foul brood as I find your strain resistant. One of the queens bought of you last season built up from a nucleus and made 360 pounds of surplus honey."—Pennsylvania.

"I find your bees gentle, best of workers, and they stand the long winters here fine."—Manitoba, Canada."

"The two-pound packages I got of you last year made an average of 150 pounds of surplus honey. I find your bees not only hustlers but also gentle."—Illinois.

"The one-pound packages bought of you made a surplus average of 175 pounds of extracted honey and an increase of 39%, which is as fine a record as can be had in this locality, especially when the work is done entirely by amateurs."—Pennsylvania.

"I am well pleased with the bees I got from you last year as they paid for themselves and made a nice profit."—Iowa.

Price List of Packages With Young Queens by Express.

1-lb. packages, $4.00 each; 12 or more, $3.75 each. 1½-lb. packages, $4.75 each; 12 or more, $4.60 each. 2-lb. packages, $5.50 each; 12 or more, $5.00 each. 3-lb. packages, $7.25 ea.; 12 or more, $6.75 ea. If packages are wanted by parcel post, add 10%.

Select untested queens, $1.50 each; 12 or more, $1.40 each. Select tested queens, $3.00 each; 12 or more, $2.75 each. Wings of queens clipped free of charge.

We guarantee our bees and queens to give absolute satisfaction and to arrive in perfect condition with the exception of those shipped by express to Canada. The largest packages we are able to ship by mail to Canada are our 1½-lb. Canadian Specials. Bees will be shipped promptly date named, 10% cash with order and the balance just before shipment.

M. C. BERRY & CO., BOX 697, MONTGOMERY, ALA., U. S. A.
WAS HAYNEVILLE, ALABAMA.

DON'T BE CONFUSED

¶ In buying a larger hive than the ten-frame Langstroth hive. Quinby invented an eight-frame hive with frames about 11¼ inches deep. It was long ago found inadequate in size and was made into a ten-frame hive, a size we have offered for some years.

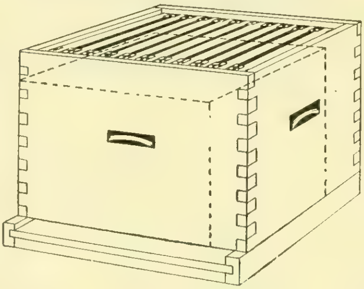
¶ Charles Dadant found the ten-frame Quinby depth hive needed another frame. He also found it a beekeeping necessity to change this hive further, and evolved the 1½-inch spacing from center to center of the frames. This is the real principle to be considered in the

MODIFIED DADANT HIVE

(REGISTRATION APPLIED FOR)

Deep frames 11¼ inches. Frame space ventilation, swarm control easier, 6¼-inch extracting frames.

Large one-story brood-nest, adequate winter stores, greater brood-room, standard covers, bottoms.



Present equipment may be used as super equipment on Modified Dadant brood-chambers. Covers and bottoms for this hive are the familiar metal roof cover with inner cover and regular standard bottoms, except for larger dimensions.

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Send us your name and address and we will send you a copy of our new illustrated catalog free.

August Lotz Company
BOYD, WISCONSIN

ITALIAN BEES AND QUEENS

With two thousand strong, healthy colonies of Italian Bees to draw from, with experienced help and proper equipment we can fill all orders promptly. Write for price list and special prices in car load shipments.

SAFE DELIVERY AND SATISFACTION GUARANTEED.

	April	May	June
1-fr. nucleus with queen	$4.00	$3.50	$3.00
2-fr. nucleus with queen	5.50	5.00	4.50
3-fr. nucleus with queen	7.00	6.50	6.00
4-fr. nucleus with queen	8.50	8.25	7.75

POUND PACKAGES WITHOUT QUEENS

1 pound Italian Bees	$2.50
2 pounds Italian Bees	4.00
3 pounds Italian Bees	5.75

Add $1.50 for queen. 20% with order.

WEBER BROS. HONEY CO.
RIALTO, CALIFORNIA

APRIL ANNOUNCEMENT

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They are all "Root Quality." Our line is complete. You will do well by getting your supplies early. Send for our catalog.

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We are offering a New Outfit, very moderate in price. Send for circular.

Friction Top Pails

2½-lb. cans, 5-lb. and 10-lb. pails. New prices now in effect. How many do you want?

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For tin pails—it sticks. One pint, 25c; one quart, 45c; one gallon, $1.50. Remember **it sticks.**

A Million Berry Baskets

and crates to hold them. "A" grade wood baskets. Wax-lined paper baskets. Send for price list.

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Get a good start this season. Order our supplies and get them early. Now is the time, for you know April showers bring May flowers, aud before you know it the bees will be humming in the clover.

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Write for our catalog.

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SYRACUSE, N. Y.

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Package Bees and Queens for 1922

Our Special Offer

ONE PACKAGE FREE WITH EVERY SIX ORDERED.

Price of packages by express with young queens.

1-lb. package, $4.00 each; 6, $3.90 each; 12, $3.75 each. 2-lb. packages, $5.50 each; 6, $5.25 each; 12, $5.00 each. 3-lb. packages, $7.25 each; 6, $7 each; 12, $6.75 each.

Price of Queens

ONE QUEEN FREE WITH EVERY SIX ORDERED.

Select untested, $1.50 each; 12 or more, $1.40 each. Select tested, $3.00 each; 12 or more $2.75 each. If package bees are wanted by parcel post, add 10% for postage.

Our bees are wonderful honey gatherers, gentle and very resistant to all diseases. Give us your order and we are confident that you will be pleased with our strain of bees. In comparing our prices with others remember we give you one package free with every six you buy. Pure mating, safe arrival and satisfaction guaranteed. Wings of queens clipped on request. We ship the day specified. 10 per cent cash with order, balance just before shipment is made.

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HAYNEVILLE, ALABAMA.

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Guaranteed, certified, Annual Sweet Clover.

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The seed is hulled and scarified, with a purity of 99.8% and grows 97%. Price now is $2.00 per pound.

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Our seed is pure. You buy from an old established firm with a reputation to maintain when you buy from

THE HENRY FIELDS SEED COMPANY
SHENANDOAH, IOWA.

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Mr. Beekeeper: — We have the stock, equipment, and experience, and can give you prompt, satisfactory service. We are not going to say that we have the best bees in U. S. A., but we do say that we have as good as can be bought for the money. Give NORMAN BROS.' 3-banded Italian queens and bees a trial and see for yourself. You risk not a brown penny; if you are not satisfied, notify us and we will replace or refund your money. Our bees are hardy, gentle prolific. disease-resisting and honey-gatherers. Orders booked with 1/4 down. After April 15 orders filled by return mail.

PRICES APRIL AND MAY.

	1	6	12	100
Untested queens	$1.00	$5.50	$10.00	$72.00
Sel. Untested...	1.20	6.50	12.00	90.00
Tested queens..	2.00	11.00	21.00	
Select tested...	2.25 each.			

One 2-lb. package bees, $3.75; 12 or more, $3.50 each. Add price of queens wanted.

We guarantee pure mating, safe arrival, free from all diseases. Isn't that enough said?

NORMAN BROS. APIARIES, Naftel, Ala.

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In 5 or 10 pound lots by parcel post, prepaid, 30c a pound.
In 25 to 50 pound lots by express prepaid, 25c a pound.
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Seed is guaranteed to be pure sweet clover running from 50 to 90 per cent pure Annual, the balance Biennial. Germination we also guarantee to fully please.

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HIGH QUALITY QUEENS

NUCLEI AND PACKAGE BEES

Untested queens, $1.25 each; $13.50 per dozen; 25 or more, $1.00 each. Select untested, $1.50 each; $15.00 per dozen; 25 or more, $1.15 each. Select tested, $2.25 each; $25 per doz. 2-frame nucleus, $4.25; 3-frame nucleus, $5.75. 1-pound package, $2.50; 2-pound package, $4.25; 3-pound package, $5.75. Add price of queen wanted with nucleus or package. Fullest satisfaction guaranteed. Read what this customer says:

> "Dear Mr. Bornhoffer: We want to tell you how greatly pleased we are with the nuclei we got of you this spring. Those we received of you a year ago this spring far excelled those received from other shippers of nuclei in the South, and this year again yours are outstanding ahead in every way of those received from others. Both years your bees have been noticeably gentle, non-swarming, and great honey-gatherers." (Name on request.)

FRANK BORNHOFFER

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At quality-sustaining prices. Reared, caged and mailed without being touched by hands. Properly prepared for the mails. From Selma, California, to Hankow, China, 47 days in the mails is my unequaled record.

Prices: One, $2.00. Three, $4.50. Six, $8.00. Dozen, $15.00. Fifty, $60. Hundred, $110.00.

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"Big Essentials in Successful Beekeeping"

Read what leading beekeepers say of it:

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quality, disease-resisting, and honey-gatherers why not Root's strain that has been tested out for over 50 years? I am prepared to take care of your wants. Small or large orders will receive my prompt attention. Quality, service and satisfaction is my motto. Remember you get what you order with a guarantee backed by years of experience.

PRICES TO JULY 1.

Untested Queens, 1, $1.25, 12, $13.80, 100 $90.00. Select Untested, 1, $1.60. Tested, 1, $2.00. Select Tested, $2.40.
After July 1, 10% discount.
Write for circular.

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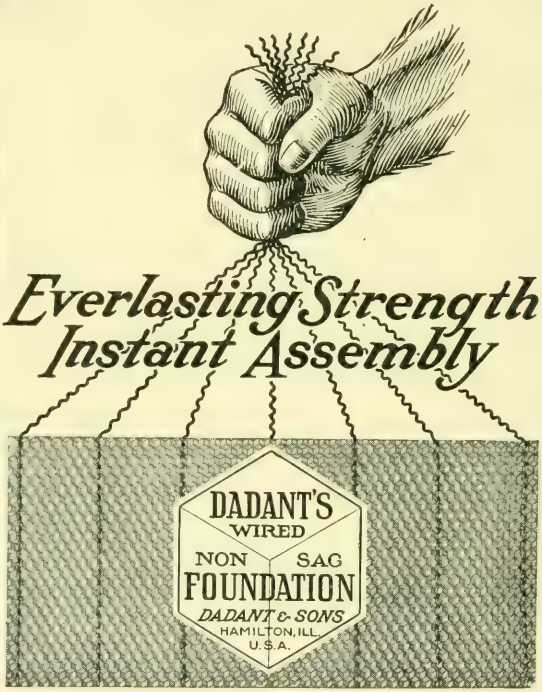
Reinforced Foundation

A Real Success at Last

Makes Non-Sag All-Worker Comb

Quickly Accepted by Bees Without Reservation



Cuts Out Cost and Labor of Hand-Wiring

The Finished Comb a Delight to the Eye

(Patents Pending)

TESTED BY TIME AND USE. Dadant's Wired Foundation is not an experiment of a few months' time, but it is a carefully evolved specialty of a life-time of foundation specialists. It has also been thoroughly tested for several years in large apiaries in all parts of the United States.

ITS USERS ARE ENTHUSIASTS. We have dozens of statements like the following:

> "I have tried Wired Foundation this year under the same conditions with foundation wired horizontally. Every frame of the old style foundation sagged badly but the Wired Foundation made perfect combs. I have 75 big hives in use now and not a comb in a single one of them is anywhere near as perfect as those I have had drawn from Wired Foundation. **I call it the greatest improvement modern beekeeping has had for many years."** PORTER C. WARD, Allenville, Kentucky.

DADANT'S WIRED FOUNDATION may be used in new style split bottombar frames or in the old style one-piece bottombar frames with equal satisfaction. It is also adaptable to any size and style of brood or extracting frame.

COSTS NO MORE. Since Dadant's Wired Foundation cuts out the cost and labor of wiring, its extra price of three cents per pound above the catalog prices of old-style foundation is thus more than returned to the beekeeper.

ASK FOR SAMPLES. A small mailing sample sent free on request. A sample of seven sheets, for either split bottombar or old-style one-piece bottombar frames, will be sent, postpaid, to any address in the United States for $1.00. Specify size desired.

DADANT & SONS HAMILTON, ILLINOIS

Catalog and Prices on Foundation, Bee Supplies, Beeswax, Wax Working Into Comb Foundation and Comb Rendering, for the asking.

GLEANINGS IN BEE CULTURE
APRIL, 1922

EDITORIAL

Several Important News Items.

OUR "Just News" department is crowded out of this issue by exceptional demands on our space. It is only because of this fact that we do not give a full report of the incorporating of the Empire State Honey Marketing Co-Operative Association at Syracuse, N. Y., on Feb. 24, backed by a large number of the leading honey producers of New York State.

Other beekeeping news items of importance that we wish we could give more extended notice are: The short course in beekeeping at the Connecticut Agricultural College, April 11 to April 21, given by L. B. Crandall, bee specialist in the extension service; the releasing of a moving picture film, "Bees—How They Live and Work," by the U. S. Department of Agriculture; and a very favorable report on Hubam clover issued by the Iowa Experiment Station.

The Spray Poison Evil.

A BEEKEEPER in a fruit-growing district writes that his colonies were badly injured last year by spray poisoning, some of his strong two-story colonies being reduced to mere nuclei just at the time they should have been building up most rapidly for the honey flow. His letter is typical of dozens of others making similar complaint. In some cases what the beekeeper thought to be depletion by spray poisoning, on investigation turns out to be European foul brood, but there are plenty of instances of great damage to bees through carelessness or utter disregard of the interests of the beekeeper on the part of fruit-growers. Several have asked whether it is advisable to shut the bees into their hives or put them into a cellar at spraying time. The Editor would be inclined to move the bees away from orchards where the trees are sprayed while in bloom. If all the bees were moved to safe locations, the orchardist would, no doubt, soon be willing to pay the beekeeper to return the bees to the vicinity of the orchard, to insure better pollination. For this kind of service the beekeeper is justified in asking a liberal price. See in this issue the articles, "Wonder Work of Bees" and "Beekeeping and Agriculture."

Gleanings is prepared to furnish printed cards calling attention to the value of bees in fruit-growing and directions for spraying without injuring the bees. These will be furnished free, upon request, to our subscribers who desire to distribute them among their fruit-growing neighbors.

The Income Tax and Beekeeping.

IN MANY cases, no doubt, the necessity of making out an income tax report has been a blessing in disguise to beekeepers and farmers, for it has compelled them to keep accounts in their business. Keeping careful accounts of all costs and sales is a prime necessity in any business, especially so today when the margin of profit, if any, is small and when the balance is too often on the wrong side of the ledger unless great care is taken to hold down the costs of production and selling. Those who have not heretofore kept careful records of all the costs entering into the production and handling of their crops of honey should by all means begin this at once. It is not necessary for the beekeeper to be an expert accountant. His problems of accounting are greatly simplified by a careful study of the various forms sent out by the Internal Revenue Department for income tax purposes. If a record is made of every item of expense connected with the production of honey, it should not be difficult to make up a balance sheet at the end of the year.

While no charge for labor on the part of the owner or members of his family is permitted in the income tax report, for business reasons a careful record of all the labor should be kept.

The time and expense which go into the care of the colonies throughout the year, representing the fixed expenses, should be kept separate wherever possible from those incident to securing the crop such as supering, taking off the honey, extracting, packing and selling, which vary according to the size of the crop. When such records are kept over a period of years it becomes possible to determine what it costs to operate the bees in a given locality. This forms a basis for figuring how many pounds per colony must be secured to pay expenses. A compilation of such data for various parts of the country would be of great value. The Michigan Agricultural College is now obtaining such data for Michigan, the project being under the joint control of the Departments of Entomology and Farm Management. Michigan beekeepers who are willing to assist in this can secure from the college at East Lansing, a pad of accounting sheets and inventory blanks, which are designed to simplify the beekeepers' cost-accounting.

Prohibiting Importation of Bees and Queens.

SINCE the discovery of the cause of the Isle of Wight disease by Dr. John Rennie and his associates, as announced late in 1920, certain things have developed to cause American beekeepers considerable concern.

Last summer the Bureau of Entomology called for samples of sick bees which might be suspected of having this malady. Samples were sent from all parts of the country, but none of them were infested with the parasitic mite which causes the Isle of Wight disease. While this does not prove that these mites do not exist in this country, it certainly is strong evidence that they do not.

Last summer a sample of live bees, taken from a colony suffering from Isle of Wight disease in Scotland, was sent to the Bureau of Entomology at Washington. The mites were alive when these bees were received at the Bee Culture Laboratory, thus demonstrating that these parasitic mites can easily be transported by bees shipped into this country from Europe.

While Isle of Wight disease was originally supposed to be confined to the British Isles, it has recently been discovered in the French Alps. Remembering the rapid spread of this disease from the Isle of Wight, where it was first observed in 1904, to all parts of Great Britain, its discovery now in the French Alps is certainly cause for alarm. In the light of these developments the subject was taken up at the meeting of the Apiculture Section of the Association of Economic Entomology, held in Toronto in December. A committee was appointed to plan some measure to prevent the introduction of this disease into the United States and Canada, this committee being composed of Dr. S. B. Fracker, State Entomologist of Wisconsin; Prof. Geo. H. Rea, Pennsylvania State College; and C. B. Gooderman, Dominion Apiarist of Canada. A conference of entomologists and inspectors was called by Dr. Fracker on March 9 at the Bee Culture Laboratory of the Bureau of Entomology at Washington, where it was decided inadvisable to apply any means of regulation as to the importation of bees and queens and that nothing short of absolute prohibition of further importations would meet the situation.

Following is a report of the action taken at this meeting:

Serious ravages causing almost complete destruction of the beekeeping industry in portions of Europe by the "Isle of Wight" disease have started determined action by American beekeepers to save their business from similar losses.

"Isle of Wight" disease is caused by a parasitic mite in adult bees and is easily transported by bees shipped from Europe to America, as was proved during the past summer when live bees carrying living mites arrived in Washington from Scotland. Should this disease become established in America, beekeepers, queen-breeders and manufacturers of bee supplies would quickly be ruined and horticultural interests would be seriously damaged.

A meeting was called at the Bee Culture Laboratory in charge of Dr. E. F. Phillips of the Bureau of Entomology at Washington, D. C., March 9, which was attended by specialists from several states and Canada who are interested in measures to prevent the introduction of the "Isle of Wight" disease into the United States and Canada.

Among those at the meeting were Dr. L. O. Howard and Dr. C. L. Marlatt, Chief and Assistant Chief of the U. S. Bureau of Entomology; Dr. E. F. Phillips, Government Apiarist; Prof. F. E. Millen, Apiary Inspector for Ontario, Canada; Prof. Geo. H. Rea, Pennsylvania State College; E. G. Carr, Apiary Inspector of New Jersey; J. G. Sanders, Harrisburg, Pennsylvania, President of the American Association of Economic Entomologists; Prof. N. E. Phillips, Massachusetts Agricultural College; and Dr. H. E. Ewing, Expert on Mites, of the U. S. Bureau of Entomology.

The meeting decided to recommend that the U. S. Post Office Department shall at once prohibit the introduction of queen bees through the mails from all foreign countries except Canada, and that a bill be introduced into Congress to prohibit the introduction of adult bees into the United States except for experimental and scientific purposes by the U. S. Department of Agriculture. Since there is no known Isle of Wight disease in Canada, and since it is hoped and expected that the Dominion of Canada will establish the same safeguards to the beekeeping industry, it is planned not to establish any quarantines or prohibitions against shipments of bees from and to Canada.

It was the opinion of those in attendance that the Isle of Wight disease is such a serious menace to beekeeping on this continent, that every possible step should be taken to prevent its introduction, and that all importations of queen bees should be stopped. Pending full legislation in this matter, it is hoped that beekeepers through the continent will co-operate, to the fullest degree, by making no attempts to introduce adult bees into the country. Any queen-breeder who introduced this disease into the country would be doing a great damage to the beekeeping industry, and it would be a serious drawback to his future business.

The committee urges that beekeepers who see any outbreak of any disease of adult bees shall at once send samples for examination and diagnosis to the Bureau of Entomology, Washington, D. C. More detailed information concerning this disease will be presented in a future issue of this journal and in the meantime information may be obtained by writing to the Department of Agriculture, Washington, D. C., for a copy of Department Circular 218, entitled, "The Occurrence of Diseases of Adult Bees," which circular is for free distribution.

Signed by Committee.
J. G. Sanders, Harrisburg, Pa., Chairman.
E. G. Carr, New Jersey.
F. Eric Millen, Guelph, Canada.

Those who have imported any bees or queens from Italy or from any other foreign country, should watch their colonies for any indications of this disease, and, if any such are found, samples of sick bees should be sent to the Bureau of Entomology at Washington for examination. If it should be discovered that the Isle of Wight disease has already been brought to this country, the colonies should be found and immediately destroyed. No chances should be taken in such an important matter.

OUTSIDE OBSERVATIONS

Significance of What the Bees Do as Seen in External Examinations Before Hives Are Opened

By M. C. Richter

How many in our profession are diligent enough in taking notice of what transpires about the apiary and about the hive entrance? A beekeeper who has cultivated a trait of keen observation is indeed fortunate. When we leave home for an outyard do we look straight ahead and permit our thoughts to ponder over our probable crop or prices for honey, or do we observe the bloom along the roadside, and record that visited by bees, the number of bees noted on the bloom, what they are gathering, the time of day, etc.? If we are observant we might catch a ''line of flight'' as we travel along. The line of flight is worth studying. Are they our bees? If in doubt, it might pay us to follow up, if only to discover that someone had jumped our location and placed an apiary but a few hundred feet from our own. It is not a bad idea to become acquainted with the bees in our vicinity. Moreover, on some ideal bee day during April we might spy a swarm along the roadside. In other words, be a keen observer and let crop and honey prices take care of themselves.

Observations About the Apiary.

Upon arrival at a yard at the busy season of the year, it is a great temptation to light the smoker at once and start right in on a row of colonies. This is an unwise procedure under any circumstances.

Watching the Flight of Bees.

The first thing we do is to watch bee activity, and we walk about the yard and mark the direction in which the bees are going. (In all our observations we take particular note of the time of day.) By studying their line of flight a few moments we can judge fairly well, taking into consideration several factors such as climate, time of day and year, etc., whether the colonies are (1) wearing themselves out, (2) making a living or (3) storing a surplus. (1) When but a few bees are flying in almost any direction and with no marked line of flight, they fly ''wild'' and are known as searching or prospecting bees. There is then no incoming nectar and, if some colonies are to be manipulated, precaution against robbing must be resorted to on the very first hive opened. (2) A fair amount of general activity about the colonies with a marked line of flight, and with the intake of nectar balancing the consumption of stores, protection against robbing is likewise in order. (3) The line of flight is well marked, even in two or more directions. The flight is swifter and lastly the tone of the bees is very audible. In fact, upon just reaching the apiary and just after the motor has been stopped, we know whether or not the bees are storing a surplus. The line of flight helps to determine what the bees are doing, but hive-entrance observations are just as important. This subject will be discussed later.

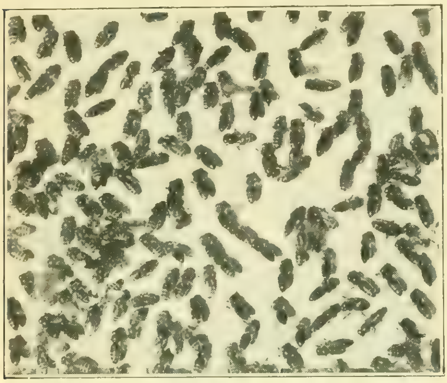
Mean Bees About the Yard.

Another thing we notice upon entering the yard is whether the bees seem unduly cross. If we have some hybrid stock we take it into consideration. However, if the bees seem unusually mean we look for an overturned colony, and not finding any we will ''try'' several tops to ascertain whether or not they are ''tight,'' for perhaps some colonies have been manipulated during our absence. If the tops be in order we look for skunk tracks. Another cause for meanness could be attributed to the shutting-off abruptly of a honey flow. It might be added that pure Cyprians confine their stinging to the hive, and that crosses show a most vindictive character for weeks after manipulation.

Swarm returning to parent colony. The general direction of flight is towards the hive, and the bees are rapidly alighting at the entrance, setting up their ''call'' for their sisters to follow.

Looking for Swarms.

We almost always look for swarms about the apiary and after several seasons learn to know their favorite clustering places. It is a characteristic of black bees to cluster higher than Italians. We never take it for granted that we know the condition of our bees to the extent that they won't swarm on a certain day. Surprises are very apt to occur; but, granted that no swarms have issued, it often happens that outside swarms are attracted to the apiary and cluster near by. Aside from natural swarming there are found, but only in poor beekeeping practice, hunger and disease swarms. In treating for American foul brood, it is advisable to have an excluder between the bottom-board and brood-chamber so that the shaken bees have no opportunity to abscond. A heat swarm is of rare occurrence and is encountered only in a very hot dry spell. When such excessive weather prevails (115°F. in the shade) bees will leave their homes in some instances and cluster on trees. While on the subject of swarms, it might be mentioned that it is an excellent idea to set out several decoy hives about each yard.



Entrance (alighting-board) to colony shown in previous cut. A true type of leather-colored Italians, lined up in front of their home, abdomens slightly elevated, fanning at a speed faster than one thousand per second (photo taken at speed of one-thousandth of a second) and exuding and driving away their scent, which emanates from a gland (visible in picture) situated between the seventh and eighth terga of the abdomen.

One other point: Do not become so engrossed in your colony manipulations throughout the day that you forget to look up occasionally and survey the apiary for issuing swarms. Many a swarm has disappeared in just such fashion.

Observations at the Colony Entrance.

Having made the observations about the apiary, which seldom take longer than two or three minutes unless swarms be encountered, we next place our attention upon the hive entrances. It is surprising, the amount of valuable information that may be gathered from a study of the entrance to a bee's home. The beekeeper detective can find any amount of evidence at the threshold of a colony, and the more observant he becomes, the greater are the number of clues which he picks up.

The act of (1) swarming is at once distinguishable by the "pouring out" at the entrance and by the way in which bees fill the air in their circular flying. After a swarm has issued we notice, on the alighting-board and adjacent thereto, the very young hairy bees that were unable to take wing with the swarm. Their presence furnishes us with a clue, which tells us that the colony examined has cast a swarm.

On the (2) return of a swarm we may find a disabled queen about the entrance. She may be clipped, wing-frayed, feeble or too heavy to fly. We examine next the entrance for signs of queenlessness (see "6") and, if such examination confirms our suspicion, we know that the swarm has returned to the hive. When (3) young bees take wing for the first time, which usually occurs just after the noon hour, they do so in a sort of an up and down movement facing the hive entrance. Gradually they increase their radius of flight, apparently marking all the while the spot where their home stands. A little study of this activity

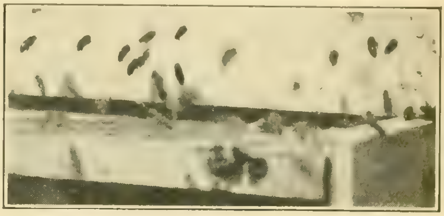
Immense swarm taking possession of a decoy hive.

will at once contrast itself with the flight of the (4) incoming honey gatherers. The latter do not tarry about the entrance, as do the young bees, but soon drop on the alighting-board and disappear within. The outgoing honey gatherers leave the hive like a shot and soon vanish from sight. (5) The pollen-laden bees are indicative of breeding. When little or no pollen is carried into a certain colony, as contrasted with a considerable amount of pollen-bearers entering most other colonies, it is a sign of either a failing queen or queenlessness in the former. (6) Queenlessness means restlessness, intermittent fanning of wings of some of the bees and a running about, along the hive entrance, over side walls of the hive, and even on the ground, in search of their queen.

Young bees learning to fly at 1 p. m. They mark their location, facing the hives, and widen their flight radius as may be observed by the photo.

In (7) laying-worker and drone-laying colonies as well as queenless colonies there is a certain amount of apathy towards work as contrasted with normal colonies. Normal colonies have their guards, ventilators, incoming and outgoing bees, etc., performing their tasks regularly but in "6" and "7" we see little groups of bees idling away their time, as it were, and the general inactivity of such colonies is at once noticeable.

Unusually agitated or excited bees, with no other apparent reason for such condition, may be attributed to the (8) mating of a virgin queen, to the process of (9) feeding, and to the (10) balling of a queen. From the time that a virgin queen leaves a colony until a short time after she returns, there is usually an undue amount of agitation about the entrance; soon after bees are fed there is a decided "investigative turn of mind" at the entrance; and in "10," if we do not see a knot of bees at the entrance or on the ground, the "ball" is likely to be found on the floor-board. Balling of queens is very rare when colonies are not manipulated and may be due to bad weather, or the abrupt stoppage of a honey flow, and is confined, as far as we know, to the black race of bees.



View of colony entrance during a honey flow. The heavily laden bees, some carrying pollen, are alighting slowly at the entrance.

When we see (11) drones flying for the first time in spring, we know that almost any day thereafter virgin queens are liable to emerge. This is a valuable observation, as it is an indication that treatment for swarming is in order. We must all know that (12) expulsion of drones indicates that the honey flow is over. When we notice, however, that some colonies tolerate drones several weeks after most colonies have expelled their male inhabitants, we know that we have colonies that are either (13) supersedure ones, or that they are queenless, laying-worker or drone-laying colonies. Dead queens before colony entrances may be attributed to supersedure, if she be a worn-out queen; to a balled queen when she shows the effects of much abuse (it is practically impossible, however, to distinguish between the two); and if there be one or more virgins or immature queens, to swarming.

The bees (14) fanning at the entrance are the ventilators of the hive and ripeners

Expelling from and hindering the entrance of drones into the hive after a honey flow.

of honey. A study of their activities will soon show how much ventilation and ripening are taking place. During honey flows these two processes go hand in hand, and in the evenings, this evaporation practice, indicated by the roar of the bees, is an excellent indication, to one who is familiar with this phenomenon, of the amount of surplus stored during the day. Bees fanning in very hot weather, and when there is usually no honey flow, should never be molested. A normal colony can maintain a cooler temperature within than that which exists without the hive, but if either smoked or opened during such a hot spell, it may never be able to regain the necessary colony temperature which prevents the burr and brace combs in the upper story from melting. Melt-downs originate in just this manner. The phenomenon of (15) clustering outside the hive may be due to excessive heat, to a preponderance of honey gatherers at a time when there is no nectar secretion, or to a honey-bound condition within the colony. Occasionally upon the return of a swarm, all or a part may cluster without. The action of (16) robbers is, we are sure, understood by all of us and this propensity of the bee need hardly be mentioned. Prevention! Keep everything covered, contract entrances of weak colonies, use a robber tent, or do anything that spells prevention. Above all, never smoke a colony that is being robbed. By so doing, the guards become disorganized and the effect of the smoke upon the robbers is negligible.

In the fall of the year (17) propolizing bees may be confused with robbers. Crevices between supers, and between super and tops are often propolized, and the action of bees during this kind of work often resembles robbers nosing about for an opening. (18) Crumbs of wax strewn about the hive entrance is usually a sign of wholesale robbing. Open up the hive and look for scales of American foul brood. If none are found an expression of relief is surely in order. Otherwise, constant inspection must be resorted to throughout the season. Sometimes bits of wax (cappings) are found about the entrance. Their presence may mean nothing more than the consumption of stores from within, as the removal of stores remote from the cluster to cells surrounding the winter nest is of common occurrence during the inactive season.

Bees affected with (19) paralysis are easily distinguishable about the entrance, and all of us are hoping that the Bureau of Entomology at Washington will soon tell us what we have when we talk about paralysis. Occasionally we see bees carrying (20) out dead larvae or pupae; this act may be caused by acute starvation, chilling of the outer part of brood-nest, or by the brood having become overheated.

The above observations are helpful in colony diagnosis and they can be made doubly advantageous if they be used from a comparative standpoint.

Lastly, after the day's manipulations in the apiary have been concluded, we make it a point to examine carefully the entrances of every colony that has been handled. (If we feel that there is any likelihood that queens may be balled, this observation is made during the day.)

Our purpose in doing this is to observe whether or not the colonies are queen-right, and also to notice how mischievous robbers have become.

Big Sur, Calif.

WONDER WORK OF BEES

They Make Millions for the Fruit Growers. Bees that Returned to the Orchardist Over $100 per Colony

By A. H. Hendrickson
College of Agriculture, University of California

THE relation of the honeybee to the production of deciduous fruit is a question that interests both the beekeeper and the fruit-grower. In the early days of horticulture nearly every farm kept a few bees as a sideline, but of late years this practice has almost entirely disappeared. The fruit farm with a number of colonies of bees is now the exception rather than the rule. Sporadic attempts have been made from time to time to interest orchardists in general in keeping bees, but almost invariably they have resulted in failure. The orchardist was a fruit-grower and not a beekeeper; hence he soon lost interest when he began to lose swarms and his colonies became diseased. Steadily diminishing crops in many of the highly specialized fruit sections have caused a widespread interest in anything that will bring up the yield. Attention has been re-directed to the humble bee as the conecting link between trees and fruit.

Actual experiments with honeybees in orchards were carried on over 30 years ago. Professor A. J. Cook, who was our State Commissioner of Horticulture for several years, while stationed at the Michigan Agricultural College, proved the value of bees in apple orchards. He gave substantial figures to back his claims. In 1893, at a California state fruit-growers' convention, several observers reported on the value of bees in their respective districts. As early as 1894 a government report showed that the cherry crop in a large orchard near Vacaville was greatly increased when several colonies of bees were placed in the orchard. It is interesting to note that this ranch today keeps a large number of bees and produces large crops consistently year after year. Yet on other ranches in the same section where crops were erratic, the owners did not believe that bees were in any way responsible. In spite of this information printed in the reports of the State Commission of Horticulture and hence available to the county commissioners and others, many growers had no conception of the importance of these useful insects. Many ranchers went to the opposite extreme and disposed of their bees, claiming they were a nuisance at drying time and generally hard to care for. In 1916 and 1917 the University of California by means of tents of mosquito netting over prune trees proved conclusively the value of bees in prune orchards. Since that time the use of these insects in the Santa Clara Valley and elsewhere has steadily increased. In 1921 the results of similar experiments demonstrated to the Placer County growers the need of bees for their plums. From interest shown thus far it would seem that this district would be a promising field for an energetic beeman with several hundred colonies to rent.

Process of Fertilization.

Before proceeding further, it would be well to stop and consider briefly what is necessary to secure a set of fruit. The importance of bees is more fully realized when the intricate process of fertilization is understood. Assuming that the orchard has been given normal care, the trees will blossom in a satisfactory manner at the proper time. Each blossom produces one or more pistils, as the case may be; a large number of stamens; a row of showy white or pink petals; and, on the outside, a row of green sepals. The important organs are the first two, the petals being largely for show. The pistil, or female portion, consists of a young fruit in which is located the unfertilized egg, and above which is a rather long slender stalk surmounted by a flattened sticky surface called the stigma. The stamens, or male elements, are long slender filaments bearing the anthers, which enclose large quantities of pollen. Deep down in the flower is usually the nectary which secretes the honey. At the proper time the pollen falls upon the stigma, germinates, and sends down a tube thru the pistil to the egg. The male nucleus passes into the egg and unites with the female nucleus, completing the process of fertilization. Under this stimulus the young fruit develops very rapidly. If the egg is not fertilized in a comparatively short time, it shrivels and the young fruit turns yellow and falls to the ground.

The egg or young ovule remains receptive for perhaps several days, depending somewhat upon the climatic conditions. If not fertilized during that time it begins to disintegrate and the young fruit is doomed to fall. Many potential fruits are lost each year because the egg was beyond the receptive stage before the pollen tube reached it. Thus, the rate of growth of the pollen tube down the style becomes a very important factor. If the growth is slow, disintegration of the egg may commence before the nucleus can pass over and complete the process of fertilization. Experiments have shown that pollen tubes grow much slower in cold weather than in warm, which may help to account for light crop following cold springs. Pollen tubes also grow much slower in self-pollinated flowers than in cross-pollinated ones. Self-pollinated fruits are those pollinated with the pollen from the same variety. Cross-pollinated fruits are those produced when pollen from another variety is used. This slow growth may be one of the fundamental causes of sterility among deciduous-tree fruits. For full setting it would seem that the ideal conditions would be fairly warm clear weather and ample facilities for cross-pollination, so that a strong, active growth would be secured in the pollen tubes.

In addition to this impediment to self-pollination just described, nature has also provided others which are more obvious. Many fruits like the plum and apple do not have the pistil and stamens maturing at the same time. While the pistil is receptive, the pollen is not yet mature. Consequently pollen from another variety must be placed on the pistil to secure fertilization. Another factor is the one of difference in length of the important organs. In certain varieties of almonds, cherries and plums the pistil is so much longer than the stamens that there is no possibility of the pollen dropping on the stigma. An exception to this rule seems to be the apricot and possibly the peach. With but few exceptions the pollen must be transferred mechanically to the stigma of the same or different flowers. Insects and wind are the only two distributing agents worthy of mention. For practically all of our tree fruits except walnuts, wind as a pollen carrier may be considered as practically negligible in value. Insects are the effective pollen carriers. No one knows exactly of what importance each one is, but the honeybee is usually considered the most valuable. Increased crops, due to the addition of bees to the orchard, is ample proof of this statement.

Fruits Requiring Cross-Fertilization.

Bees are a vital necessity with many varieties of fruits, and are very helpful with nearly all others. Among the fruits which are benefited by bees are almonds, apples, cherries, pears, plums and prunes. Shy bearing in almonds, for a time attributed to cold weather and similar causes, is largely due to lack of cross-pollination. In bulletin

306 of the University of California, Professor Tufts has shown that all varieties of almonds are self-sterile. He recommends interplanting proper varieties and the use of one colony of bees per acre. In bulletin 307 he makes the same recommendation for pears. In various parts of the United States apples have been greatly aided in setting crop with bees, because so many varieties of the fruit are self-sterile. Likewise, cherry varieties, as shown by work in Oregon, Idaho and California, are all self-sterile. The writer has observed many demonstrations of the value of bees in cherry orchards where there was formerly almost no crop. Japanese plums are likewise self-sterile with but few exceptions and are in great need of effective cross-pollination. The same is true of most European plums. Among prunes two well-known varieties are self-sterile and two are self-fertile. The results, as reported in bulletin 294 of the California Experiment Station, show that the Imperial prune, long notorious as a shy bearer, is wonderfully benefited by bees; and even the French prune, long known as a consistent bearer, is caused to produce larger crops by these same insects. In other sections bees are helpful in producing different crops. It is reported that cranberry yields are greatly increased by the use of bees, and their importance in growing tomatoes and cucumbers under glass is well known.

On the other hand apricots, according to some observers, are pollinated with their own pollen before or soon after the blossom opens. It is also known that they are self-fertile and able to set fruit with their own pollen. Whether bees would aid this fruit or not is a question that has not been answered as yet. The same situation exists with many varieties of peaches. The flower is so constructed that self-pollination may take place easily. The writer has also observed that the peach flowers are very attractive to bees and are visited by them in great numbers. What effect the work of bees may have on this fruit is not known; but most certainly there seems little cause for worry, as great plantings of a single variety of this fruit are known to produce regularly and abundantly.

The importance of the element of time, as previously mentioned in pollination of flowers, cannot be overestimated. Distribution of pollen for a given variety must be made in a very few days. If delayed, lack of set may result for the reason already explained. It is in this case that the bee is especially valuable. Other insects might succeed in visiting every flower if given time enough; but the bees, due to their untiring efforts, seem to accomplish this work in the shortest possible time. The consequent mixing and distribution of pollen, as soon as the pistil is ready to receive it, is the thing that makes for big production. Large numbers of bees are needed in cloudy or wet and rainy seasons where every hour of sunshine counts.

Preference Shown by Bees.

Bees have preference for particular varieties. Some kinds are accepted until others open, when the former are deserted. There are not many data on this point, and it is of more concern to the grower than to the beekeeper. It has been reported that in some sections bees have been observed to desert cherries for apples. In my own experience I have observed that early Japanese plums are not visited as frequently as the later varieties. For example, Formosa and Gaviota are both shunned when the European kinds begin to open. Scanty production of pollen and honey in these two varieties may be the cause. Bees are said to work satisfactorily on strawberries and are especially fond of raspberries. In California, because of their long blooming season, the latter fruits are of considerable value as honey plants.

Some growers have their own bees, but most prefer to rent for the season. The rental is usually made with the understanding that the owner is to place the bees where desired and to remove them promptly after blossoming season in order not to interfere with other orchard operations. The best method of distribution is to place the hives singly throughout the orchard. This method insures a more even set of fruit than is the case where 10 or 20 colonies are all put in one place. It is also well to put the hives near the center of the orchard, so the bees will work near at home as much as possible. The average grower is not altruistic to the extent of paying for an increase in his neighbor's crop. Ordinarily about one hive to the acre should be sufficient, although excellent results have been obtained when fewer were used.

Increased Yield Due to Bees.

Noticeable increases in yield have invariably followed the use of bees. What these increases are in actual figures is hard to secure. The average grower knows he harvested a larger crop than he did before, and that is about all. One or two examples, however, will suffice. In 1916 one grower with 180 acres of prunes produced 344 tons of dried fruit. The following year when 115 colonies of bees were used the crop was 432 tons, an increase of nearly 100 tons. Another grower on seven acres of cherries with 17 tons in 1918 raised his yield to 52 tons in 1920 and to 49 tons in 1921 by the use of 10 colonies. Other growers have undoubtedly had similar experience elsewhere.

Quality of Cross-Fertilized Fruit.

With most of stone fruits there is no outward sign showing whether the fruit has been properly fertilized or not. If the fruit matures and ripens it is usually considered to have been fertilized, altho no one ever thinks of cracking the pit to see if the kernel is developed or not. In our experiments plums which were self-pollinated by hand showed no difference in size, shape or quality from those cross-pollinated. The plant breeder would be interested in determining how seeds would germinate and grow from the various combinations. The grower, however, is satisfied when the fruit remains on the tree to maturity. With apples and pears the case is somewhat different. Instead of one pistil to each flower there are five. All five must be pollinated and the respective eggs fertilized to secure a perfect fruit. Very often, due to lack of pollination, only three of the five carpels or divisions in the core of the apple have perfect seeds, while the other two have not. The fully developed portion of the fruit corresponds with the side having the perfect seeds. The Cornell Experiment Station has shown a direct relation between the number of seeds in an apple and the percentage of June drop. This drop always consists of the fruits having the smallest number of seeds. In other words the larger the number of seeds, the better the chances for that fruit to remain on the tree until mature.

In California where Bartlett pears are grown extensively, a great portion of the fruit is found to be practically seedless and coreless. For reasons as yet unexplained this pear under our conditions is seemingly able to set and mature fruit whether it contains seeds or not. The seedless quality of this variety, it is argued, constitutes a distinct advantage, as the core is much smaller and the flesh is not so gritty. These factors are advantageous to the canner and grower where the product is consumed soon after picking. In the demand for a long-keeping pear, however, some interesting points have been developed in this connection. The University of California has recently shown that the Bartlett pear with perfect seeds keeps from two to three weeks, or more, longer than the seedless ones picked at the same time. The advantage of cross-pollination for producing a long-keeping pear is obvious.

Injury Caused by Bees.

The average grower in general has two grievances against the bee. One is the attacking and injuring ripe fruit on the trees and in the dry yard, and the other is in the spread of certain diseases, notably pear blight. Usually the sight of several bees gathered around a split or puncture in a ripe fruit is enough to cause the grower to want to rid the entire countryside of these obnoxious visitors. The benefits received during the blossoming season a few months previous are entirely forgotten. It has been demonstrated that bees are not the primary cause of injured fruit. The first damage is usually done by birds or insects which have piercing mouth parts. The honeybee comes along later and gets the blame. Actually the damage, if any, started by bees is so slight as to be practically negligible.

With pear blight the case against the honeybee is somewhat stronger. Experiments have shown that bees do carry blight, and that the blight organism remains alive in the hives for several weeks after it has been brought there. However, to my knowledge it has never been definitely proved that bees prefer the sticky exudate of the blight canker to the honey in the blossom when the latter is available. It may be that the blight organism is picked up accidentally and thus transferred to the blossoms. Because of its size the honeybee seems to be the most frequent visitor to pear trees, and hence is judged guilty of doing all of the harm. As a matter of fact other insects, such as thrips, aphis, ants and beetles of various kinds are as guilty as the bee. If they were not, how is blight in young twigs and on young trees without blossoms explained? The solution to this difficulty is to use more care in removing old hold-over cankers which form sources of infection. The honeybee must be given credit for performing so faithfully the function of distributing pollen, and should be relieved of the stigma of being the chief carrier of blight, and a general nuisance at harvest time.

BEEKEEPING AND AGRICULTURE

Honeybees of Great Value in the Pollination of Certain Field Crops as Well as Fruit

By Geo. S. Demuth

SOME one has said that the only way by which one can honestly gain a living by stealing is to keep bees. These industrious little workers pay no attention to line fences or land ownership, but roam freely over neighboring fields, gathering nectar from other peoples' flowers and carrying it home to make into honey, which enriches the owner of the bees instead of the owner of the land.

Just what are the bees carrying away from the neighboring farms when they bring their loads of nectar? The chemist explains that it is chiefly sugar and water. He further explains that sugar is a carbohydrate, so called because it is composed of carbon, hydrogen and oxygen, the hydrogen and oxygen being in the same proportion as in water. Plants are able to combine these elements in such a manner that sugar and other carbohydrates are formed.

Where Does Nectar Come From?

Who owns the carbon and the water from which the plant elaborates the nectar, which the bee carries away across line fences? The carbon is taken from the air where it exists in the form of carbon dioxide, and the water is carried to the farm on the wings of the wind from ocean, lakes and ponds or wherever the air can pick it up by evaporation, except in arid regions where it is carried to the farm in irrigation ditches. These elements, from which honey is made, also disregard line fences and land ownership, roaming freely over the earth. The carbon of the amosphere and the rain come alike "on the just and on the unjust." Ownership of either of these would be difficult to establish.

When the miner takes out of the earth coal, iron or oil he is depleting the resources of the country. The fisherman and the lumberman destroy instead of create resources. The manufacturer is usually a consumer of the world's resources in manufacturing his product. Commerce does not create resources but only trades in them. Agriculture is practically alone among the industries as a creator instead of destroyer of resources. But even the farmer is, to a certain extent, a miner of the soil, for when he hauls certain crops from his farm he is hauling away a portion of the wealth of the land.

Production of Nectar Does Not Deplete Soil.

The beekeeper, being a producer of an almost pure carbohydrate, takes practically nothing from the soil, the amount of ash in honey being almost negligible. When he ships his crop to market he is shipping away material derived from air and water. No matter how many carloads or trainloads of honey are shipped out of a state, the resources of the state are not touched by its removal. Water and air can come back from beyond state borders, if need be, to replace that which was taken away in the elaboration of the nectar from which the honey was made. By nature's wonderful magic, the world's supply of carbon and water is not used up by the continued elaboration of sugar, for these are only borrowed until the honey is consumed, when they go back to the great reservoir whence they came. The cycle of carbon in nature and the part it plays in plant and animal life is one of the wonderful romances which science has to tell to those who care to hear.

Bees Usually Pay Well for What They Take.

But in taking the nectar which the plant has appropriated from the air and passing clouds, the honeybee in many cases renders a service to the plant, and therefore to the owner of the plant, which is of greater value, measured by human standards, than the value of the nectar. Much has been written about the pollination of fruit and the relation of bees to horticulture. In 1909 Dr. E. F. Phillips wrote in the U. S. Department of Agriculture Bulletin No. 75, Part VI, as follows:

> Fruit-growers, as a rule, recognize the value of the honeybee to their industry. Taking into consideration the insurance of pollination by transporting colonies of bees to places where their services are needed, it is safe to say that the indirect benefit of the beekeeping industry annually adds to the resources of the country considerably more than the amount received from the sale of honey and wax.

Much has been learned in regard to the value of the honeybee in cross-pollination since 1909, and no doubt a revised statement by the same author for 1922 would be much stronger.

At the short course for beekeepers at Berkeley, Cal., in December, Prof. A. L. Hendrickson, in charge of deciduous fruit investigations of the Agricultural Experiment Station, University of California, gave some striking figures on increased yields due to bees. In one case a grower, with 180 acres of prunes, increased the yield of prunes nearly 100 tons above previous yields by having a beekeeper put 115 colonies of bees in the orchard during the period of bloom. The prunes were sold at $120 per ton, so the extra yield gave a gross return of $12,000, or more than $100 for each colony of bees used. For this service the beekeeper was paid $3.00 per colony, or $345.00.

It is not necessary to discuss here the value of bees to the grower of apples, cherries, pears, plums, prunes, almonds, berries of various kinds, cucumbers, beans and other insect-pollinated fruits and vegetables, for the value of bees to horticulture is already well discussed in the beekeeping literature. But it may be well to mention here some of the studies that have been made recently on the pollination of certain field crops.

Pollination of Coffee.

In 1911 the United Planters' Association of southern India asked the government to pass some rules prohibiting the destruction of bees in the coffee-planting districts, on account of a reduction in the coffee crops, evidently brought about by the regular destruction of bees in certain districts. As a result of this the Department of Agriculture at Madras made a careful study of the fertilization of coffee. Results of this investigation were published in 1915, in Vol. IV, Bulletin No. 69, Department of Agriculture, Madras, which contains the following summary:

> The presence of bees is not essential for the successful pollination of coffee, but the natural, and therefore most desirable, form of pollination is achieved by the aid of flower-visiting insects of which bees are the most important.

In this case the giant bee of India (*Apis dorsata*) is mentioned as the species referred to, and recommendations are given for increasing the numbers of these bees in the coffee districts in order to increase the coffee crops.

Tower, in Porto Rico Circular 13, calls attention to the value of the common honeybee to coffee-growers in cross-pollinating coffee, especially in seasons when there is considerable rain at blossoming time.

Pollination of Buckwheat.

In Farmers' Bulletin 1062, U. S. Department of Agriculture, Clyde E. Leighty, Agronomist in Charge of Eastern Wheat Investigations, has the following to say on the pollination of buckwheat:

> Commercial beekeeping in buckwheat-growing sections is advisable, as bees can make use of the flowers produced and may in turn be of use in fertilizing the flowers. Many buckwheat-growers, in fact, believe that the weight per bushel of the seed is heavier where the crop has been worked largely by the bees.

Pollination of Alsike Clover.

It has long been recognized that the honeybee is the most important agent in the fertilization of alsike clover, though actual figures showing their value to the grower of alsike clover seed are by no means plentiful.

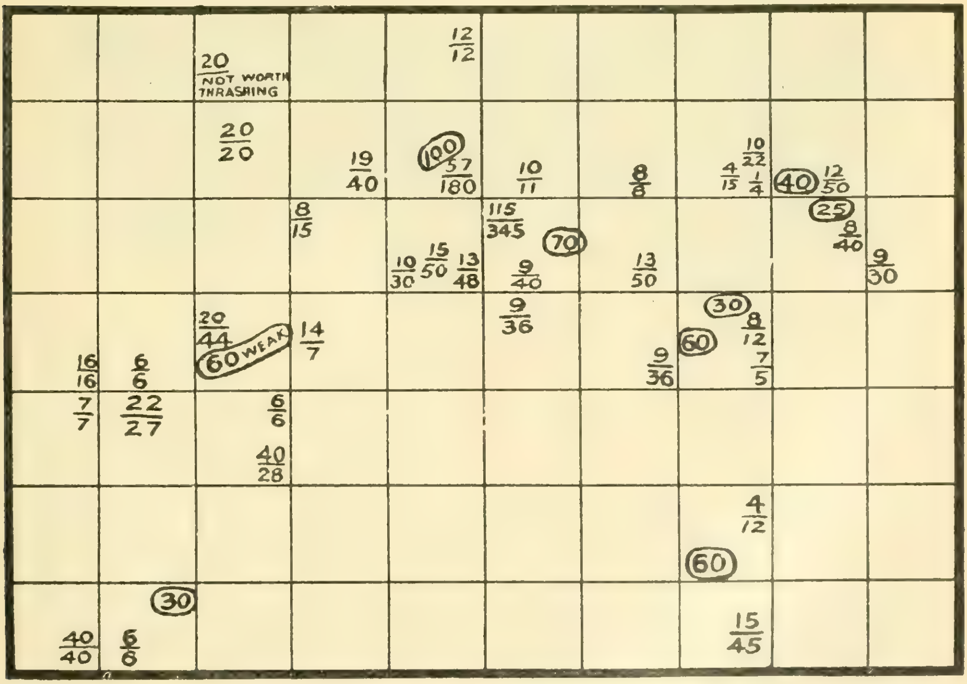
Dr. Ernest Kohn made some observations on this subject in the alsike clover seed-producing district of northwestern Ohio in 1919, which were recorded in this journal in April, 1920, as follows:

> I have made a complete survey of the township and got all the information from threshers and other sources, concerning about 80 square miles, giving the location of bees, with number of colonies, and the location of alsike clover fields with acreage and yields.
>
> The accompanying map shows in circles the location of bees, with the number of colonies. The numerator of the fractions represents the number of acres of alsike, and the denominator denotes the number of bushels threshed. The yield was not heavy at any place, as drought shortened the nectar flow at least three weeks. It will be noticed, however, that near a large number of colonies the yield is three to four bushels per acre, while two miles or more from bees the yield is not more than one bushel per acre. * * * The farmers near the bees received more cash per acre from the seed than they did from any other crop produced, and at the same time they were storing fertility in their soil.

No doubt the honeybee is responsible for most of the alsike clover seed produced in this country; for, as Dr. Kohn explains elsewhere in this article, the fields of alsike clover more than two miles from bees were not worth threshing.

Pollination of Red Clover.

Red clover, which is known to be practically self-sterile making it necessary that pollen come from a separate plant in order to effect fertilization, was long thought to be pollinated by bumblebees only, but beekeepers have for years noted some evidence that the honeybee is an important agent in the pollination of this plant. Practically every year I have found the bees working freely on red clover blossoms in the vicinity of my apiaries in Indiana not only on the second crop but on the first crop as well. When the weather was dry and otherwise favorable for nectar-secretion I have seen fully as many honeybees working on the first crop of red clover during a heavy honey flow as on white clover and alsike clover.

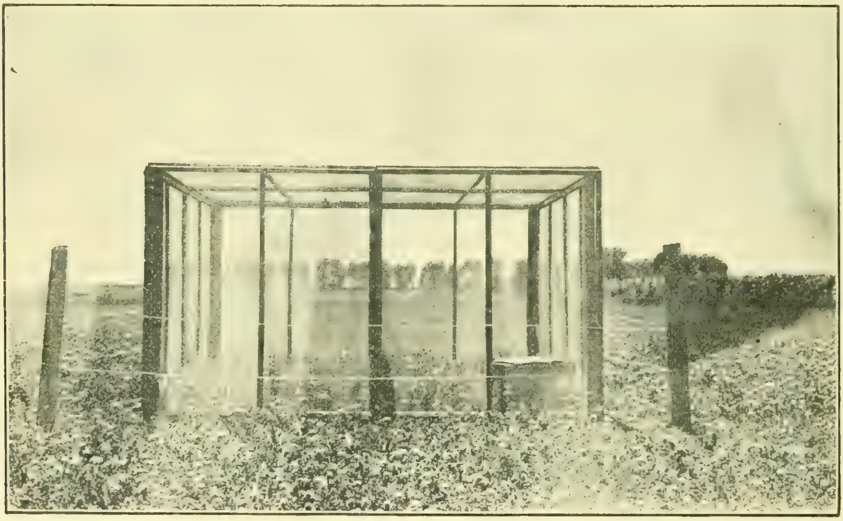


The circles show the location of the colonies. The numerators of the fractions represent the number of acres of alsike and the denominators the number of bushels threshed.

Whenever this has happened the heads which were permitted to ripen from the first crop contained 30 or more seeds each and often as many as 50, so a seed crop could have been taken from the first cutting. Only an occasional bumblebee could be seen working on the blossoms of the first crop while there were thousands of honeybees. In this locality the second crop of red clover sometimes enables the bees to store a surplus after white and alslike clovers have ceased blooming.

Where red clover is grown for seed in Idaho, the seed crop is taken from the first cutting instead of from the second as is usual in the East. No doubt the abundance of honeybees there helps to make this possible, for at the time of the first bloom bumblebees could not yet be sufficiently abundant.

A study of the pollination of red clover, made by the United States Department of Agriculture and reported in Bulletin No. 289, published in 1915, substantiates the observations previously made by beekeepers as to the ability of honeybees in cross-pollinating red clover, as will be seen from the following extracts:



Screen cage used by the United States Department of Agriculture to determine the efficiency of honeybees as pollinators of red clover. A colony of bees was placed within the cage and bumblebees were excluded by the one-fourth-inch mess screen.—Fig. 6, Dept. of Agriculture, Bulletin No. 289.

> In order to determine the efficiency of the honeybee as a cross-pollinator of red clover, a cage 12 feet square and 6 feet high, made of galvanized-wire screen having 4 meshes to the linear inch, was erected in the same field as the bumblebee cage. It was previously determined that a mesh of this size would permit a honeybee, or any insect smaller than a honeybee, to pass thru, but would not permit bumblebees to do so. Two weeks before the clover came into bloom a small colony of honeybees was placed in one corner of this cage (Fig. 6). The bees soon learned to pass thru the screen. By the time the clover began to bloom the bees had become accustomed to the cage, and while most of them worked on flowers outside, some could always be seen at work on the clover within the cage. Bees working on the clover within the cage were observed to collect pollen from the flowers and carry it to the hive.
>
> As soon as all the flowers in the cage were mature, an area 4 feet square was measured off and all heads within this area were collected, kept separate, and thrashed by hand. Of the 623 heads collected from this area an average of 37.2 seeds per head was obtained.
>
> The higher yield of seed obtained in the honeybee cage than in the bumblebee cage may be attributed, at least in part, to the larger number of bees which had access to this clover. However, the ratio of honeybees to bumblebees was no greater in the cages than in the clover fields in the vicinity of Ames in 1911.

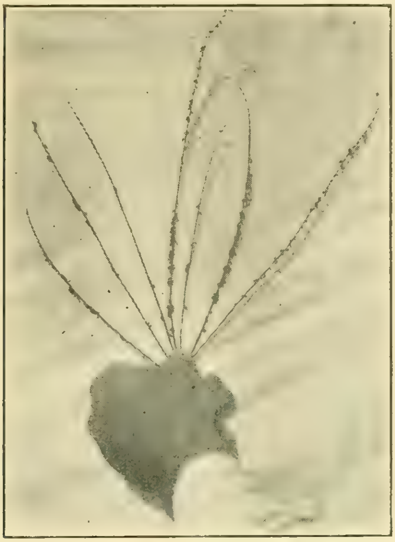
In the summary of this bulletin the authors say:

> The honeybee proved to be as efficient a cross-pollinator of red clover as the bumblebee in 1911. When the precipitation was considerably below normal in June, July and August, 1911, and but few nectar-producing plants were to be found, honeybees collected large quantities of pollen from red clover. In order to collect pollen they must spring the keels of the flowers. In doing this they cross-pollinate the flowers.

In the regions where red clover seed is grown, there are usually no other honey plants in bloom during the second bloom of red clover, and beekeepers in these regions know that near large apiaries many more honeybees may be seen working on red clover practically every year than any other insect. No doubt the yield of red clover seed is increased near large apiaries by the many visits of honeybees. If data on the yield of red clover seed near large apiaries were collected, it would, in all probability, show the highest yield in fields adjacent to the apiaries and decreasing yields in more distant fields, as in the case of alsike clover mentioned above.

Pollination of Sweet Clover.

Last August the U. S. Department of Agriculture published a result of some studies in pollination of sweet clover in Department Bulletin No. 844. These studies were conducted at Arlington, Va., and at Ames, Iowa, in 1916. The biennial white sweet clover (*Melilotus alba*) was used chiefly in these experiments, for it had previously been determined that both *Melilotus alba* and *M. officinalis* (yellow biennial) were visited by the same kinds of insects and that both required the same methods of pollination in order to set seed. There is every reason to believe that the annual white sweet clover (Hubam) requires the same methods of pollination. This makes the findings of the Department of even greater interest just now.



Racemes of Hubam clover, from which bees were excluded, at DeGraff, Ohio. A large wire-cloth cage was placed over the plants while in bloom. Only a few seeds were developed.

In regard to the necessity of insect pollination for sweet clover this bulletin says:

> The results in Table V show that an average of 0.37 pod to the raceme was obtained from the plants protected from visitation by all insects during the flowering period. As the racemes of *Melilotus alba* will average approximately 50 flowers each, less than 1 per cent of them set seed without being pollinated by insects. * * * * *
>
> On account of the ease with which the heavy flow of nectar of sweet clover flowers may be obtained many insects visit the flowers, thereby pollinating them. While the useful insect visitors of flowers of red clover are limited to a few species of Hymenoptera, those pollinating sweet-clover blossoms are many and belong to such orders as Coleoptera, Lepidoptera and Diptera, as well as to the Hymenoptera. However, in the United States the honeybee is the most important pollinator of sweet clover.

Recognizing the value of honeybees in pollinating sweet clover, the leading growers of Hubam seed, last summer, had a large number of colonies of bees moved into the midst of their acreage of seed-producing Hubam. The A. I. Root Co. supplied a carload of bees to pollinate the Hubam clover for the DeGraff Food Co., DeGraff, Ohio.

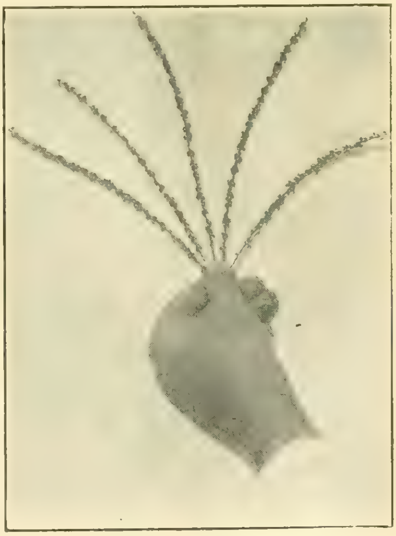
Pollination of Cotton.

Who would ever think there could be any relation between the honeybee and the production of automobile tires? Here is a statement by Thomas H. Kearney, Bureau of Plant Industry, U. S. Department of Agriculture, in The Journal of Heredity, March, 1921, showing the importance of the honeybee in increasing the yield of the long-staple cotton, used by tire manufacturers.

> There can be no doubt, in the light of these facts, that thorough pollination, which results in an increased number of seeds per boll, also increases the yield of fiber. What, then, can the cotton-grower do to insure effective pollination? It is, of course, not in his power to increase the number of wild bees and wasps which visit his cotton flowers, but often honeybees also are effective pollinators. It would, therefore, seem desirable to encourage the keeping of bees in the vicinity of the cotton fields and to watch their behavior in relation to the crop.

The use of bees to increase the yield of long-staple cotton was also advocated by Rowland M. Mead in the Journal of Heredity for October, 1918.

More and more careful investigation is revealing the value of the honeybee to agriculture. The growers of insect-pollinated crops of the future will not take a chance on the haphazard pollination by insects not under control, but will demand that pollination be insured every year. Agriculture in the future will, no doubt, demand that large numbers of bees be kept where certain crops are grown. Agriculture would demand this, even though honeybees never yielded any returns in honey.



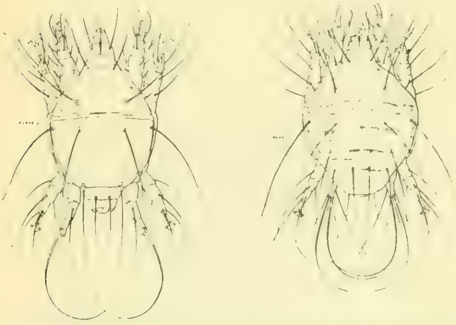
Racemes of Hubam clover to which bees had free access during bloom. These were taken from the same plot of ground as those shown in cut at left but were outside the cage during bloom. Note they are well filled with seed pods.

FROM THE FIELD OF EXPERIENCE

THE ISLE OF WIGHT DISEASE

The Mite Causing this Disease Not Yet Found in the United States

American beekeepers have been much interested in the reports that have come from their fellow workers in Great Britain regarding the losses that come from the Isle of Wight disease, as it is commonly called. So far as is known, this condition does not exist in the United States, and naturally we are not anxious to have it. The findings of Dr. John Rennie and his associates of the University of Aberdeen, reported in December, 1920, that the disease is caused by a parasitic mite, *Tarsonemus woodi*, seemed to hold out ultimate hope of some remedial methods, for until the cause was known little could be done on treatment. This investigation is one of the outstanding discoveries of the decade in beekeeping, and great credit is due Doctor Rennie and those who worked with him.



Mite associated with Isle of Wight disease. Figure at left male, dorsal view. Figure at right female, dorsal view.—(Hirst.)

A recent paper by Stanley Hirst, the English specialist in mites, is of interest for two reasons. First, he gives much the best illustrations that have yet appeared of the mites found in bees suffering from the Isle of Wight disease; and, second, he decides that the mite is so specialized in structure that it should be placed in a new genus. It should now, according to Hirst, be called *Acarapis woodi*. The illustrations, partly drawn by the artist Tarzi, are especially fine and are here reproduced in part. These will give an idea of the characteristics of this parasite, and would be useful in identification in the event that at any time mites are found in the United States which are suspected of being the one which causes the disease which has been so destructive in Great Britain. In the differentiation of various mites the number and position of hairs are important.

Hirst's descriptions of the mite are technical and they are not given, but any one interested may find them in the June, 1921, number of the Annals and Magazine of Natural History, VII, No. 42 (9th series), pp. 509-519.

From time to time a considerable number of samples of diseased adult bees have been sent to the Bureau of Entomology for examination and since the announcement of the results from Aberdeen they have been examined for mites; none of them were found to contain specimens of this mite. In case any peculiar cases of disease in adult bees are observed, the Bureau of Entomology will be glad to receive specimens for examination. Such specimens may be sent in an ordinary queen mailing cage but it will be better to send a larger number, preferably as many as 200, in case any serious condition is observed.

Mites are sometimes found about the hive, especially in dried pollen and in debris, and in case such material is observed it will be worth while to have it examined also. It is not at all probable that *Acarapis woodi* would be found in any such place, but now that a mite is found to be causing a disease of bees, it will be well to get all possible information on mites about the apiary. Several species of mites have already been found in such places as are indicated. Mites are so small that they may often be overlooked, but can often be detected by slight movements in debris.

Washington, D. C. E. F. Phillips.

* * *

THEIR VALUE WORTH THEIR COST

A Defender of the Much Maligned Drone Says the Workers Shine up to Him

On page 151 of March Gleanings, Mr. Aeppler gives the readers of Gleanings a very interesting article relative to the food value of larval food. Without wishing to throw any discredit on the work of Mr. Aeppler, I desire to call attention to one or two details which have a bearing on one of his conclusions.

In getting the weight of the feed as taken from the cells of drones and of workers, what precautions or signs did he go by to select those of the same age? Did he go by size alone? If he did there is a great chance for error for two reasons. Drone and worker larvae are not of necessity the same age when they are the same size. Again, larvae of the same size are not necessarily of the same age even if of the same sex. Bees flood larvae with food at intervals, and though I have much yet to learn in this regard I am inclined to the belief that the

FROM THE FIELD OF EXPERIENCE

flooding is related to the skin-casting periods. Queen larvae have abundance of food with no break, but drone and worker larvae are not fed freely while they are in the quiescent period just prior to the moult. It would be a very easy matter to select 100 larvae, then to select another hundred of apparently the same size, and then to find that in one case the food was ten times what it was in the other.

It does not seem at all reasonable that bees should waste food on the drones, nor that the drone larva because of its sex should waste food in its feeding. Now, as drones are only 11/5, that is, only a trifle over twice as heavy as workers, they should need only twice as much food. Mr. Aeppler finds them fed over five times as much. Something is wrong here, or rather has been overlooked. Possibly the drone food has much more water in it.

My real subject, however, is not the relative cost of producing drones and workers, rather is it the value of drones in spite of their cost. In the efforts to cut down the number of drones there is, in my opinion, danger of going too far. Drones are expensive to rear, although it is quite possible that they are reared at a time when there is an excess of food, much of which would otherwise be wasted. It requires only a limited number of nurse bees to care for all the worker brood of a colony, and if the nurse bees are in excess the condition is much like that of a family with a new milch cow. Said family gets a pig to use up the excess of milk. Bees should at seasons appear able to rear a horde of drones with but little apparent drain upon their resources.

When we limit a colony to combs all worker this colony is all right until this excess-food period comes then they seek a remedy. They will put drone cells anywhere they can.

Why will beekeepers persist in going contrary to the instinct of bees? Bees came into their own while our remote ancestors were just coming out of the seas and acquiring lungs. These instincts are pretty well fixed, and the wise beekeeper will go no further than try to guide these instincts rather than try to thwart them. If, then, miscellaneous drone comb is a nuisance, why not give in to the bees and let them have a reasonable amount in a place where it will prove least annoying. Users of the crosswise frame find that the best place is the lower third of the front comb.

Drones may cost, but trying to eliminate them is also costly. But suppose we could, in some cheap fashion, succeed in eliminating drones almost entirely, would it pay? In regard to this proposition, I have no absolute data. Such are difficult to get. Honey flows, colonies, treatment, local condition, etc., etc., offer such a variety of conditions that one finds it almost impossible to make an exact conclusion. For these reasons I offer the following only as my belief, not as a proved fact.

In my experience I have been led to conclude that those colonies which lead in honey production are colonies with numerous drones, that rarely does a colony produce a bumper crop of honey and not also rear a lot of drones. I have seen exceptions, but these exceptions are of such a nature that one is unable to deduce anything from them. I am led to conclude that the presence of numerous drones in a colony acts upon that colony as a whip. Let us put this into exact figures.

Suppose two colonies are exactly equal except for this one thing—colony one rears few if any drones while colony two rears 5,000. Admit that it took 10 pounds of honey or its equivalent to rear those drones. Colony one is ahead of colony two by 10 pounds of honey. A heavy flow of honey comes and lasts for three weeks. Colony one has stored a surplus of 100 pounds, while colony two has stored a surplus of 140 pounds. It will be seen that colony two has not only wiped out the 10 pounds advantage which colony one had, but has gained an advantage of 30 pounds. The 5,000 drones cost 10 pounds of honey, but their presence in the hive caused the colony to gain a net profit of 30 pounds.

These figures are all suppositional, and not backed by any experimental data. Yet in my study of colony life I have been amazed again and again that apparently colonies supported a numerous drone progeny with no apparent loss. How account for it? I never have been able to account for this paradox except in the way outlined above. Whether I am right or not, I think it will be wise for us to go slowly in this matter of seeking to eliminate the drone. If the drone reacts upon colony activity and so actually pays well for his board and keep, in spite of the fact that he can himself gather no honey nor do any work about the hive, then he must be considered of economical value.

We call worker bees neuters. They are undeveloped females. What do we know about their sexual reactions? How can we say with any confidence that they desire in no way to shine in the presence of the male? My study of bee life has led to me to think that we should go slow in thinking that worker bees are entirely without sexual instinct. I believe that it is residual sexual instinct in them that brings on the swarming fever, but that is another subject.

Norwichtown, Conn. Allen Latham.

FROM THE FIELD OF EXPERIENCE

THE OLD LESSON REPEATED

Bees Far North Do Not Winter Best on Natural Stores Alone

On Sunday, March 5, bees in our home district (York County) had their first cleansing flight since late last fall. Although we have had a milder winter than usual, yet around home here not a day was warm enough for the bees to take to the air. As previously mentioned, our bees south of Hamilton have had more than one good flight during this time—all going to show what 50 or 60 miles may mean in the matter of wintering bees. On March 6 my son and I made a hasty visit to five apiaries in the home district to see that no entrances were clogged or water standing in front of entrances. With the first warm weather, pools of water will sometimes form directly under the entrance, even if the hives are all on high ground.

Judging by the looks of things at the different yards, I should say that there will be little loss, taking all apiaries into consideration. At four yards we noticed but one dead colony and that was queenless last fall and overlooked when the bees were packed. This one dead colony was one among an apiary of 178 colonies. Of course, there will be sure to be losses later on from queenlessness, etc. In fact, we always expect a certain percentage to drop out each spring when systematic requeening is not carried out in actual practice, much as we would like to be able to do this.

At the fifth and last yard visited, conditions were not any too good, and we found three colonies dead and a few others ready to go, all from the same cause—dysentery. It required no examination to tell the reason of these impending and actual fatalities. Simply looking at the back of the hive, to see whether the colony had been fed sugar syrup or left with natural stores was all that was required to solve the problem. At this apiary the bees are all on Jumbo frames and, as a consequence, they are quite heavy with a mixture of buckwheat and sweet clover honey gathered mainly in August. Of course they had far less sugar syrup than any of the other apiaries and, as a result, there will be more loss in that one yard apparently than in the other seven apiaries where the bees were lighter in the fall and consequently had to be fed more sugar syrup to get them in condition for winter.

So far in our experience, we have found sweet clover honey a very poor food for winter. It granulates solid, and in colonies showing the dysentery so badly we found combs of honey all so solid that one could hardly dig it out of the cells. For three years we have found this same condition in colonies having any quantity of sweet clover honey for stores, and it is certainly a case of three times and out, for in the future we will not risk this grade of honey for winter purposes.

As to apiaries in Simcoe County I have heard nothing since last October, except to learn in February that all were covered with two to three feet of snow. We are just making preparations to take a run in the car tomorrow to visit the five apiaries south of Hamilton, which we have not seen since last October. This is about 85 miles from home, but we are not worrying over the trip as much as we would have worried, a few years ago, at the thought of making a trip to a yard 10 miles away. Many changes have come about during the last 10 years, and beekeeping, while not making progress in some lines perhaps as much as some other industries, has greatly changed during this time. J. L. Byer.

Markham, Ont.

WORD "EXTRACTED" ON LABELS

Needed Some Places to Distinguish Between Extracted Honey and Strained Honey

Shall we eliminate the word "extracted" from honey labels? In my opinion, no, sir! Most emphatically not. Down here in Texas we beekeepers have spent years educating our customers to the superiority of extracted over ordinary honey, which may have been boiled or squeezed together with brood, pollen, and dead bees, and the whole mass suspended in a sack to strain, drain, or drip.

Formerly our extracted honey had to compete with much of this "strained honey," as it was called. However, as the old-time box-hive beekeeper learned better methods, and transferred to frame hives, this stuff that once passed muster as honey has almost disappeared from our markets.

But if I should send out my price list quoting "Honey," I am satisfied that nine-tenths of the replies would inquire as to kind of honey (whether "extracted," "comb," or "chunk") before placing orders. Of course, if one is quoting both "Honey" and "Comb Honey," the natural supposition would be that the "Honey" is not comb honey, but at the same time it might be almost anything else; whereas all my customers know that "extracted" is the cleanest, clearest, most wholesome, and best-tasting honey they can buy.

Perhaps it was unfortunate, in the first place, to have coined the term "Extracted Honey;" but, at this late date, I submit that it would be just as big a mistake to make the change suggested.

Bay City, Tex. J. D. Yancey.

SIFTINGS

J. E. Crane

OUR friend, Allen Latham gives on page 154, March Gleanings, many good reasons why the bee-space should be below rather than on top of supers. Now, he may be right, but will it pay to change where we have hundreds or thousands of hives or supers with the bee-space on top? When I began beekeeping there was a great deal said about different-sized frames, each claiming to be better than the others, and I changed the size of my frames and brood-chamber as many as five or six times. Each size, I found, had its advantages as well as its disadvantages; and I finally went back to the Langstroth frame, not because it was better than others but because it was a standard frame in general use. We are using hundreds of supers without bee-space either at top or bottom of super and get along very well. It doesn't, as a rule, pay to keep changing over our outfit even if something is a little better.

* * *

That editorial, on page 141, on aluminum combs, is well worth the careful attention of anyone in the North who contemplates using these new-fangled combs. Our experience tallies with that of others, that these combs do not prove satisfactory in our cooler climate, however it may be in the South. Side by side I prefer the well-wired frame of foundation to a complete comb of aluminum.

* * *

The "New Beekeeping" described on page 143 is sufficiently distinct from the old hit-or-miss methods to be called new, and it has been tested by a sufficient number of beekeepers to prove its value, so it can be safely recommended to all who have not tried it out. Yes, sir, it is all right.

* * *

"When and How to Set Out," D. L. Woodward's article beginning on page 149, should be of great value to beginners. The advice to set bees out at night is doubtless all right, but of late years I have come to think a cool or cold day, too cool for bees to fly, is just as well. We usually have enough such days during the season in which to set out all our bees.

* * *

R. L. Snodgrass informs us, page 155, that 10 acres of yellow sweet clover will keep 100 colonies from starving. This may be true in Kansas, but it would hardly prove true in the East. The sweet clovers do not appear to yield nearly as much nectar in the East as in the West.

* * *

Reading Gleanings helps one to be optimistic. When we meet with some reverse we are apt to think our location unfortunate; but when we read of the difficulties of beekeepers in other sections, as for instance C. E. Bartholomew, who lost 100 colonies in a single night (see page 166) from those pesky ants, we may thank our stars we are as well off as we are. Mr. Poppleton told me the best way to fight them was to follow them to their nests and destroy them there. These nests I found mostly in the decaying roots of the saw palmetto.

* * *

The size and appearance of those western honey-houses almost take my breath away. But the West is a big country, and business of all kinds is done on a large scale. There is, however, one thing peculiar about honey-houses, that no matter how large you build you never regret it.

* * *

Honey mixed with water half and half, as described by H. M. Myers, page 167, as an anti-freeze mixture for automobiles, is an idea worth remembering. He tells us the boiling temperature is approximately 228 degrees. We are more interested in the temperature required to freeze it. Will it stand 20° or 25° below zero? An advantage of such a solution would be that it evaporates much more slowly than clear water. I set some of this mixture out last night and it stood 14° below freezing this morning.

* * *

R. J. Williams, page 154, says, "Verily there is nothing new under the sun, especially in apiculture." However true this proverb may have been 3,000 years ago, it is not so today. We have no reason to believe that the Queen of Sheba wired King Solomon of her intended visit, or that Alexander used an ounce of gunpowder in his somewhat famous conquest of the world. The Romans did not use airplanes in their military tactics nor steamboats in their warfare against Carthage. The printing press was unknown at the beginning of the Christian era; and Simon Peter never used a motorboat in setting his fish nets in the sea of Galilee. Vergil, who wrote so interestingly of bees, never dreamed of a frame hive, nor did Huber ever hear of a honey-extractor or comb foundation. Even our beloved father Langstroth or Quinby or even Dr. Miller would have opened wide his eyes to hear Mell Pritchard tell of queens taking a joy flight of an afternoon in our Indian summer, after their arduous labor of egg-laying was over. Yes! verily, there is much that is new in beekeeping as in everything else. If we were to tell of all that is new, even in beekeeping, it would take much more space than I have at my disposal.

The Small House of Southern California

CONSTANCE ROOT BOYDEN
(Stancy Puerden)

IT is an unusual and rather agreeable experience for a mother of a family to find herself so popular that she is constantly receiving invitations to take pleasant rides with gentlemen—real estate agents.

Without exaggeration I believe we have been through hundreds of houses, and let me tell you of some of the conveniences and comforts we have found in these southern California homes and see if you do not agree with us.

IN the first place the California housekeeper in average circumstances, like your wife, Mr. Subscriber, or me, apparently realizes that a small, compact house can hold more happiness than a large one, for it enables her to have more time to enjoy the wonderful climate and scenery with her family.

We have been through little bungalows which cost a small fortune to build, exquisite and perfect in every appointment and evidently designed for people who could afford to gratify every whim but preferred a house small enough to manage without a resident servant.

SUPPOSE you let me conduct you through a typical southern California bungalow, moderate in price and yet complete and convenient. We will take this frame, colonial bungalow, painted ivory white with a touch of gray green on the window screens and with a dull green, shingled roof. We might select a flat-roofed Spanish stucco, an English cottage type of stucco with steep gables or an Italian villa, also of stucco, but when one must choose a moderate-priced home I believe the good old substantial frame house is safer.

Notice it nestles close to the ground, but the lawn is gently terraced down a few feet from the house and at the street is terraced down with bricks on which ivy is growing. You see the effect is low although it is well above the street level. Notice the view of the distant mountains from the porch.

The solid front door you see is 3½ feet wide, and I have seen them even wider. While there is no screen to this door there are screens to the long side lights, and many cautious housekeepers open the side lights and view the prospective guest through the locked screen before opening the door. There are also two pairs of French doors opening on to the porch.

The living room in this bungalow is about 14 by 23 feet with a beautiful fireplace at one end, flanked by built-in bookcases which fill the whole end of the room. The fireplace is of dull finished tile in soft colors, framed in ivory woodwork, for that is the finish throughout this house. The paper, which is alike in living and dining rooms, is of a light, stippled effect which will harmonize with any color scheme.

While we have yet to see a California house without a fireplace we have seen very, very few which show use. Sometimes a gas heater is placed in the fireplace and often an ugly little stove stands out in front of it. Notice that this one has a fire of "briquets." There is a gas "floor furnace" in this room too, with a flue to carry the fumes to the chimney. Many of the bungalows are piped merely for gas stoves, and almost none of the modern ones have real furnaces.

Notice as you come into the dining room that there are glass doors in the wide opening between the two rooms. The high cost of fuel in this state makes such doors quite as much of a necessity as in the East. In the dining room is one of the most charming features of California homes. It is the built-in sideboard or buffet with ample china closets on each side, the whole extending across one end of the dining room or recessed into the middle of one side wall. Thus there is no cumbersome piece of furniture to mar the fine oak floor when moved, nor do you have to wield a daily dust mop under it. I am told that during and immediately following the war, when lumber was so high, there was a tendency to omit the built-in furniture, but the sensible, labor-saving custom is apparently returning, for some of the finest new houses we saw contained exceptionally fine built-in sideboards. Properly built they tend to make a small dining room seem more spacious and symmetrical.

The French doors, opening out to the little pergola roofed patio, make the dining room seem almost out of doors in warm weather. That little patio is typical of southern California homes, even the humblest, although it is not always out of the dining room.

NOW come out into the kitchen with me. If you men can get some ideas for improving the kitchens presided over by your wives they will appreciate it. Notice that the walls and woodwork of this kitchen are spotlessly white with a pretty, inlaid lineoleum on the floor.

I never saw a California sink which was not under a window or pair of windows, so that the housekeeper may not only feast her eyes on God's out-of-doors and breathe pure air while she is at work, but listen to the music of the mocking birds as well. In this kitchen, between the windows, is a little cupboard set into the wall. It is similar to a bathroom medicine cabinet and in it is kept a supply of soap, scouring powders, sapolio, brushes, etc. The sink itself is built in with tiling forming a shelf at each side instead of the enameled drain boards which are so common in the East. Underneath the tiled shelves the space is solidly built in to the floor with cupboards, drawers, zinc-lined bins for flour, sugar, etc., and a kneading board which slides out like those in kitchen cabinets. The space underneath the sink is open, of course, for comfort in standing before it; but all the other space is utilized, and being solid to the floor the housekeeper is saved the necessity of sweeping under it.

Above the tiled drain boards are hung more cupboards at a height which leaves a convenient working surface underneath them. Notice that these cupboards are a little narrower than those below on account of the windows over the sink. Instead of tile a composition called woodstone is often used. Above the sink notice the little recess in the tile for a cake of soap.

This built-in hood, plastered like the rest of the ceiling, is over the range to carry away the odors and steam from cooking.

Another convenience found in every California home which we have seen is the so-called ''cooler.'' This is a cupboard, shaped much like an ordinary chimney, reaching from floor to ceiling, with shelves of wire netting or slatted wood. There is a screened opening into this from the outside, below the level of the floor, and another at the the top or near the top. A current of air is drawn through this at all times, making it a good substitute for the refrigerator in cool or moderate weather and supplementing the refrigerator in warm weather. In some of the best coolers is a shallow draw shelf for eggs. These coolers are supposed to be more efficient if they are on a north outside wall, or a shaded wall, but I have seen them in all positions and on inside walls. If I were going to move back to Ohio, which I am not, that cooler idea should accompany me.

We have found both breakfast rooms and breakfast nooks or alcoves, but to my mind the latter are far preferable, saving time and effort and answering every purpose of the separate breakfast room. Having enthused over the one we built in Ohio to the extent of some 2,000 words on this page I am not going to say any more about them now.

Here is something which you men must not miss. Notice when I open this narrow cupboard door a most convenient ironing board drops down into position all ready for ironing, and notice too that a small sleeve board is so hinged that it can be dropped down over the larger board when needed. If your wife hasn't this convenience, make her a present of it and see if she does not pay for it by keeping your best trousers in press.

This wide cupboard near the range has no shelves. Instead it has rows of strong hooks on which to hang such utensils as frying pans, stew pans, etc. It is surprising how many kitchen utensils may be hung up and how much more accessible they are than when nested on shelves.

CALIFORNIA homes are sometimes built without bedrooms, having ''disappearing beds'' in living room, dining room or both, but I don't believe there is one in Los Angeles without the ''screen porch.'' By this is not meant the ordinary screened porch of the East. A ''screen porch'' is the dearest little laundry room and back porch combined you ever saw. It is really a small room opening out of the kitchen with several wide windows protected only by screen. The white enameled laundry tubs are usually placed under the windows so that the housekeeper can comfort her soul with a vista of graceful pepper trees, plumy yellow acacias, palms or perhaps a mountain view. In the house where we are at present some misguided builder placed the tubs against the blank wall of the house away from the view and light. Many of the better houses have the screened windows protected by removable sash for use in winter.

A broom and cleaner closet is often on the screened porch although it may be in the kitchen.

DEAR me, I kept you in the kitchen region so long that we shall have to hurry through the rest of the house. Three-bedroom bungalows are not as common as those with two, but this one has three and they all open in this long, rather narrow hall which divides them from the rest of the house. Opening into this hall are a most convenient linen closet with wide shelves and drawers and a large coat closet. The bedrooms with their many casement windows are as airy as the average sleeping porch. Many bedrooms in this state have Pullman windows, disappearing down into the wall, and they seem to work very well in this climate although not considered practical in the East. Sleeping porches, protected only by canvas curtains which can be drawn up by cords on pulleys, are also very popular and can be used with comfort the year around.

Notice that each bedroom has one or more convenient clothes closets with poles for clothes hangers and plenty of hooks. In some of the more expensive bungalows chiffoniers are built in at one end of the closet under a window.

The bathrooms in the newer bungalows are a joy to the housekeeper. A large proportion have beautifully tiled floors, built-in tubs and showers and drawers for towels, fine medicine closets with mirrors and exceptionally good fixtures throughout.

The attic to a southern California house is apt to be an air space only, and the tiny basement, if there is any, is a joke to an easterner. As to the garage, it is almost always present, but if I stopped to take you through it the editor would be charging me regular advertising rates.

Beekeeping as a Side Line

Grace Allen

Last month when you read Vergil's account of the "memorable art derived from an Arcadian king," showing how to re-stock your beeyard "if thy whole swarm at a stroke should fail, with no stock left for breeding," and the story of the wild bees feeding the infant Jupiter, and the other story of the beekeeping shepherd, did you smile, dear Sideline friends? Probably you did. But I know you smiled in gentle kindly wise, as at the imaginings of your own wondering wide-eyed children as they spin their baby tales. For it is from the childhood of the world that the singers of songs and the tellers of tales have handed down to us these dim old legends, some of them so strangely foolish, some of them so strangely wise, and nearly all of them strangely beautiful, with a deathless constraining beauty that men will always fold against their hearts—and love.

"Gleanings is being published in 1922." So a certain irate gentleman recently wrote me, in delicate expostulation against my enthusiasm for the antique bee lore of the old Roman poet of the Fourth Georgic, and my stories of the long-ago legendary past, when the childlike people of the young world—God's kindergarten—dreaming their dreams, spun deathless stories of nymphs and dryads and gods. It was long before cool-searching Science had learned so much and taught so much, that man's everlasting questioning as to the *why* and *how* of things around him found its earliest answers in the poetry of his own heart, flowering into lovely song and story, till the hours and the seasons and the dawns became living things, the sun was a god-driven chariot of flame, and every flower, every tree, every brook, whispering to its bending grasses, and all the sun-swept long sea-breakers held some divine life hid within. It was long before the heart of the world had been hardened in the commercialism that Wordsworth cried out so sharply against, with his

"The world is too much with us; late or soon,
Getting or spending, we lay waste our powers"

that the men of ancient Greece and Rome, though "suckled in a creed (now) outworn," sensitive to pulsing beauty and responsive to the call of the earth and the moon and the ungathered winds, cared earnestly that they might

"Have sight of Proteus rising from the sea
Or hear old Triton blow his wreathed horn."

It was long before a deepening human maturity had made more spiritual the growing conception of the great Divine Reality, at whose feet all lesser gods are laid away, that men saw in every happening of every day and in every aspect of nature the footprint of some god, and goat-footed Pan crashed through the lilies of the river for a reed through which to blow the magic music that still rings in men's hearts.

"Sweet, sweet, sweet, O Pan!
Piercing sweet by the river!
Blinding sweet, O great God Pan!"

It was long before a holy figure had walked the Galilean hills, long before a quiet voice had said "Our Father," that the beauty-loving people—out of their amazement and their humility and their awe—created so many gods, saw so many "sudden faces strike a glory through the mist."

Plutarch tells of an old tradition that when the cross was reared on Calvary all the ancient oracles ceased, and out at sea astonished sailors heard across troubled waves the sharp cry, "Great Pan is dead!" O you gods of Greece and Rome, "with your purples rent asunder," though you be dead, we love you still. We have laid aside the half-truths of your great beauty for the greater beauty of a greater and ever growing truth, yet, though you be dead, we love you still.

"By your beauty, which confesses
Some Chief Beauty conquering you,—
By our grand heroic guesses,
Through your falsehood, at the True"—

we love you still. Though even Pan be dead. (And O—but tell it not to the irate gentleman who lives only in 1922!—some of us have heard strange music "blinding sweet" across the hills, and have wondered if Pan be really dead!)

But Gleanings, insists the irate and friendly gentleman, is being published in 1922. So, having paid one last wee tribute to the "mythic fancies" and the "debonnair romances" spun in the youth of the world, and asserting stoutly our precious privilege, even while tramping steadily through the high noon of Today, of stretching one appreciative hand toward the radiant sunset of Yesterday (Ah, but it was sunrise once!), while the other reaches longingly toward the dawn of a great dreaming Tomorrow, I come happily back to the present, and make my bow to the twentieth century. And in so doing I shall let loose on this unsuspecting page a crowding troop of personal pronouns (except for one or two slips, how I held them in leash thru 1921!), and you shall see a veritable riot of those most exultant and friendly of all letters, the gayly irrepressible capital I's!—with their faithful followers, the we's and our's and us's.

It happened in 1921. Though perhaps it reached back into 1920. May I go back that far? That was when I had my nervous breakdown—a story by itself, really funny in spots, including unattended lectures, an undelivered speech of introduction, an unworn new dress—but far from funny as the months wore on. So we rented out our big old tree-surrounded house in West Nashville, furnished, and started boarding, and Mr. Allen made himself famous with the dictum, "Every woman ought to have a rest once in ten years!" For six months we boarded near the downtown section. But last April we went out to the home of the country friends on whose place we had our beeyard. What a delight it was! From the windows of this home we could see the hills and Mrs. Waters' garden. And I walked through a tiny woods lot, going over to the beeyard. Many a morning we slipped over there and cooked our breakfast in the yard; many a hot panting afternoon—O the heat of 1921!—we ate sandwiches and ice cream there and watched the long cool shadows come. (And for that matter, many a hot night we slept there too!)

One Saturday in mid-May, Mr. Allen, who leaves his office at noon on that happy day, came driving out to the yard to join me, already at work. He brought out a negro man to paint the honey-house, and sandwiches and ice cream for our lunch. After the man was well started on his work, and we had finished eating, Mr. Allen said,

"There's an auction over on Lone Oak Road. Let's go."

"Where's Lone Oak Road?" I asked. "And why do we want to go?"

"It's the road we've never known the name of, running between Hillsboro Pike and Granny White Pike," he explained. "They're advertising a country bungalow with city conveniences and two acres. Let's find out what such property can be got for."

I saw his point. For several weeks the State of Tennessee had been considering buying our old house, and I had always wanted a little home in the country.

"All right. But I'll have to stop by the house and change my clothes." Thus spoke the traditional woman.

"O never mind your clothes, you look all right." Thus spoke the traditional man, adding, "You don't need to get out of the car."

Off we went, one of us propolis-stained, short-skirted, cotton-hosed, defiantly hatted. The first thing I did was to get out of the car. The next thing was to become painfully conscious of propolis stains and cotton hose, when we promptly encountered the gallant State Librarian, whom we knew, and several silk-clad ladies, whom we didn't. The next thing was to *oh* and *ah* in delight at the arrangement of rooms and the unending windows. The next was to gasp in amazement to hear my husband's voice raised in the bidding. The next was to urge him to one more bid, when he seemed about to stop. The next was to gasp again. For the brown shingle bungalow on Lone Oak Road, with city conveniences and two acres, was ours! Talk about a surprise!

The Librarian and the husbands of the silk-clad ladies came to congratulate us.

"But what can we do with it?" we expostulated, amazed at ourselves, but modestly concealing our inner exultation at the larky adventure. "Our furniture is rented till October."

So we rented the bungalow, too, for the summer—another story in itself! But on October first, the State having bought the old house meanwhile, we moved our things out here. The moving, too, was a story in itself. Things suited to a big old brick house were utterly unsuited to a small shingle bungalow in the country. So there was a feverish time of selling—another story!—giving away, cutting down. From the attic were brought down old beloved dolls, carefully wrapt, worn-out garments, unfinished quilts, faded wedding slippers. But at last we were moved.

The first thing we did was to have the kitchen sink raised. The next was to have the two old oaks in front trimmed up and "doctored." Which is still another story. For one of them—O joy!—was a bee-tree. The bees, with nearly 50 pounds of honey, were in the hollow top part that had to be cut off. And after it was cut off, to get the men to finish their job, we had to capture the bees and take them to a young friend across the river, where they couldn't possibly find their way back. It was all pleasantly exciting. But the honey was disappointing. It was very dark and very strong and very something else and neither of us liked it a bit. And "wild honey" had always sounded so alluring, so flavored with romance and adventure! The disillusionments of life!

AS DREAMING MUST?

My heart hath long desired a room
That looked on hills and garden bloom.

This year young April's wizard wings
Dropped lovely unexpected things,
And I have watched, as from old towers,
A cavalcade of magic hours,
Through windows dawn-filled, star-strown, blue
Yet picturing earth's beauty, too.
Through one east-curving panelled glass
I see a road sweep out and pass,
Inviting south—where, green and still,
Another window shows a hill;
And where, beneath gift-laden skies,
A small white-gated garden lies.

Here I have seen spring come and go
In clump and bed and border row
Of violets and daffodillies,
Peonies and valley-lilies,
Flags of lavender—nor yet
Hath summer come with mignonette,
Hath summer spread her pinks or phlox,
Or hinted at her hollyhocks;
Not yet hath summer brought her rose
Where beauty's dream of Beauty blows.

Here I shall watch them, one by one,
Break into blossom in the sun.
And I shall see them, one and all,
Break into blossoming—and fall—
As blossomings (and dreamings?) must—
Till they shall be but haunted dust
Blowing and drifting down the ways
Of ancient unreturning days.

But though the garden dies, yet still
I lift mine eyes unto the hill.

FROM NORTH, EAST, WEST AND SOUTH

In Northern California.—The 33rd annual convention of the California State Beekeepers' Association has taken place. It was a success, and the future of the association and the industry are assured in no uncertain terms. Many of the older members were quite skeptical concerning the ability of the state association to thrive under the trying beekeeping conditions of the time. The association leaders today have the proper spirit. It is a liberal spirit, and it is the same spirit that imbued that little band of beekeepers that met on the sixth day of January, 1892, in the Los Angeles Chamber of Commerce for the purpose of organizing the California State Beekeepers' Association. Those present at this memorial gathering said that they wanted to organize an association that would "represent the beekeepers' industry of the whole state of California." Today the stationery of the Association bears the inscription, "No North, No South, No East, No West—Just California." From this little gathering in 1892, we have today only J. C. McCubbin and M. H. Mendleson. Mr. McCubbin was present at the convention, and the association voted unanimously to make Mr. Mendleson, who has worked untiringly during these many years, second vice-president.

Another indication that the bee industry is thriving in our section of the state is the fact that during the past few years no less than eight county beekeepers' organizations have sprung into existence. The counties are Alameda, Butte, Fresno, Glen, Napa, Shasta, Solano and Tulare. It is expected that during March there will be organized a beekeepers' association in San Joaquin County. We hope that this good work will continue. It is the plan to affiliate the county organizations with the state association, and we hope that local bodies will spring up overnight, as it were, in all parts of the state.

February weather was unusually cold and wet, and spring bloom will be two to three weeks late. The ground is sufficiently well soaked and there will be good crops, dependent on late spring rains and favorable bee weather. Unprotected bees have suffered somewhat from the cold and continual moisture up to the present time.

Big Sur, Calif. M. C. Richter.

* * *

In Southern California.—The weather has been cold, cloudy and rainy the past month. Work of all kinds is, therefore, held back very much. I have never before experienced such a continued cold and cloudy spell at any one time in my 26 years in southern California. However, there are enough willows and other blossoms out so that the bees could soon make a living if the weather would moderate a little. On account of so much rain, the beekeepers are very optimistic and feel that the prospects for a crop of honey in 1922 are as good as they have ever seen.

Many beekeepers are of the opinion that the orange honey crop will be very late if any crop is secured in those sections where the oranges are badly frozen. We feel that most of the prophecies on the orange crop are only a guess at best. As the leaves on the trees dry up and drop off, it makes the prospects look the more gloomy for honey from that source. But this is one of the seasons when one does not have to depend on the orange, as the black sage will be just as early and this year just as sure a producer.

Some apiaries are offered for sale and a few sales are reported, the prices ranging from six dollars per colony up.

Quite a large per cent of the beekeepers who are members of the Exchange have signed the new contract. They feel that the system is the proper one. With the prospects for a crop so promising and three years of experience back of us, the Exchange should give good satisfaction to its members during the next few years.

Steady work in the apiary will be the order this month. A few days will occur when it will be unwise to open the hives; but there are always hives to get ready, frames to wire, foundation to set, and other bee-work to do. A glance in a hive will often suffice to keep one in touch with conditions, and, just as soon as the hive is well filled with bees, one can put on a super. Even if the weather is cool no harm will result, if no brood is put above. Treat those colonies that show any signs of disease. The colonies on which drawn combs are placed for extracted honey can, in most cases, just as well draw a few sheets of foundation and be all the better for it. There are some cases and conditions where a colony will not draw comb when it will store surplus honey. It is better to have the surplus super on a few days in advance than to have the bees idle because they have no room. Surplus honey is generally stored the last part of April in southern California and extracting is usually necessary. But if a beekeeper has combs enough so that the bees can store all of the orange honey or other first crops without any extracting, it is money well invested. He should be in no hurry to extract this early honey; for if he has any trouble about unripe honey, it is sure to be this new honey, stored when the weather is still cool and in many cases cloudy. Plenty of tank room is also essential, as a continued settling tends both to clarify and ripen the honey.

Corona, Cal. L. L. Andrews.

FROM NORTH, EAST, WEST AND SOUTH

In Florida. Along the southeast coast and on the Florida Keys the spring honey flow will be at its height by the time this is in print. The saw palmettoes are in bloom now (Feb. 27) and the young plume shoots are coming on in such numbers that, if the weather is right, there will be one of the best palmetto honey flows this part of Florida has ever known.

Unfortunately the honey flow is coming a little too early for the bees to be in condition to make the most of it; however, they are rapidly extending brood-rearing and will be able to take advantage of the best part of the honey flow.

In addition to saw palmetto the cabbage palmetto is going to give a heavy bloom in March and April. This is about four months ahead of its usual schedule. It may also give a honey flow at the usual time in July and August.

Coral sumac is preparing for a heavy bloom and will come along with the palmetto this year. Usually this tree is the first to bloom in the spring and provides the bees with the stimulus necessary to start their brood-rearing in earnest.

The usual order of bloom seems to be upset this year, especially on the Keys, which have been suffering from drouth, the rainfall being over three feet below normal last year and none yet this year. There has been only seven-tenths of an inch rainfall in the past four months, and this was divided between two light showers weeks apart.

It has been exceptionally warm for the season the past winter. The temperature dropped below 60° only two nights and then did not reach 50°.

In this part of the state bees went into winter weak and short of stores. On the Keys it has been necessary to feed all winter, and feeding is an everyday task down here. If at one feeding you give them syrup in quantity sufficient to last, the bees will be unable to care for it and fermentation sours the syrup and kills the bees. Neither will the bees take syrup or thinned honey from an open feeder at any time, and will seldom disturb combs of honey when exposed in the yard. Just last week the combs of honey from an old box-hive were exposed in one yard for the bees to rob out, and it took them over four days to do it. In the North the same combs would have been licked out in an hour and the whole yard would have been in an uproar.

Key Biscayne, Fla. C. E. Bartholomew.

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In Texas. The weather conditions during February have been favorable to the bees. The month, as a whole, has been cold and to some extent rainy. While not more than two inches of water has fallen at any one place during the month it has been ample to ensure a spring honey flow. The temperature has been sufficiently low to cause the bees to be quiescent or clustered during most of the time. This has retarded brood-rearing and has decreased the consumption of stores. The coldest temperature of winter occurred the night of February 28 when the thermometer reached 20° above. Just what the result of this cold weather will be is not known, but beekeepers are certain that no harm has been done either to bees or honey plants.

There is a great deal of activity in beekeeping lines this spring. This is not only evidenced by the increased sale of bee fixtures but by the organization of a number of beekeeping firms. The very latest development is the organization of the Suni-Land Bee and Honey Company. This organization is similar in operation to the Western Bee Farm Corporation of California. It is reported that this company will start off the season with 2000 colonies of bees in its outyards. This firm should do well, as the man promoting it has been very successful in putting into operation similar schemes, and the men who will have the active charge are experienced beekeepers.

T. W. Burleson of Waxahachie started a queenyard at Mathis, Texas, just a year ago. His object was to raise queens for his own pound-package business. This experiment was so successful that Mr. Burleson has increased the size of his yards and will sell queens this coming season. The queenyard is under the care of J. W. Seay, formerly of Lancaster, Texas, who is well known to the beekeeping world. His assistant is O. E. Timm, who formerly resided at Bennington, Neb., and was secretary of the Nebraska State Beekeepers' Association.

Lloyd R. Watson, who has been the apiculturist of the experiment station, for the past year, has resigned and will take up the work toward a Doctor's degree, at Cornell University. The writer will take up the work left by Mr. Watson April 1. Quite a change will be made in the carrying out of the experimental work in beekeeping under the experiment station. All of such work will be carried out at a newly established substation, which is located 12 miles southeast of San Antonio, Texas. All of the equipment used in this subject now in the central station at College Station will be removed to the San Antonio location, and, if the present plans are carried out, this sub-station will become the largest and best-equipped laboratory for bee investigations in the United States. H. B. Parks.

San Antonio, Tex.

FROM NORTH, EAST, WEST AND SOUTH

In Porto Rico.—The tropical beekeeper may not have freezing winters to devastate his colonies, but he has what may be equally bad or worse—the wax moth. Few beekeepers who have not kept bees in warm climates can appreciate the danger of the wax moth. It is on the job every month of the year, ready to work overtime in any colony which may become weak from any cause whatever.

However, even the destruction caused by the moth has its silver lining, as it tends to eliminate the careless beekeeper and the bees that are not looked over regularly. The northern beekeeper may allow his bees to go for a year or two with but little or no attention. Unless the winter is excessively cold his loss will not be great. Not so under tropical conditions. Once let a colony become weakened in numbers by an old queen, loss of queen, or through shortage of stores, and the colony is gone, unless the owner is on hand to remedy the trouble by giving emerging brood and a new queen. If the bees are left to shift for themselves, the moth will make short work of what is left, leaving nothing but the hive filled with frames, whose wood is badly eaten by the larvae of the moth. It frequently happens that the frames are so weakened as to be of no further use.

The life of the queen under tropical conditions is short because she has little or no complete rest. Heavy loss in colonies may be looked for all over the island from this cause, where the bees do not receive sufficient attention to keep the colonies in good strength.

This is the silver lining to the troubles of tropical beekeeping. They do little harm to the man who cares for his bees. On the other hand, they will quickly eliminate his competitor whose colonies become weakened in numbers.

One thing more will tend to decimate the ranks of the tropical beekeeper. This is old Mother Nature herself. The warm, tropical showers are followed by the hot sun. This heat beating down turns into vapor or steam any water that may be lying on covers or absorbed into the wood. This condition going on, shower after shower and day after day, quickly destroys the wood of all hives that are not kept well painted with the very best of paint. So one's investment in beehives when uncared for rapidly disappears.

The specialist in bees has a large investment in his hives, bees and equipment. He well knows the importance of keeping his colonies in the best possible condition. The man who has only a few colonies as investment, or the man who works his bees as a side issue from his main business, is more likely to allow his colonies to fall by the wayside when profits are slow in coming. This condition is bound to enhance the prospects of the professional beekeeper. It is likely he will be able to absorb his smaller, less-interested competitors.

Aibonito, Porto Rico. Penn G. Snyder.

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In Alabama.—On account of the unusual warm weather for the past month the bees have begun brood-rearing in earnest, some colonies having as many as five and six frames. While this will cause greater consumption of stores it will be beneficial to the package shipper, unless the cold wave that is just beginning here is too severe or lasts a long time.

For this same reason the honey plants are making a wonderful growth, and, unless they are killed, should be in fine condition for the honey flow.

Most shippers of packages and nuclei have more orders booked than they did this time last year, which shows that the northern beekeepers are preparing to keep more bees to make up for the difference in the price of honey.

Honey is still moving rather slowly, but most beekeepers who have not sold their crop are confident that it will be all gone before the new crop is ready for market.

Montgomery, Ala. J. M. Cutts.

* * *

In Louisiana.—It seems strange that the North and East have suffered so much by cold this winter, while here in Louisiana, where the pines and palms meet, we have had very little weather when artificial heat was needed. Only one time this winter has ice formed on exposed water, and that was only for a few hours. Geraniums and other tender plants in flower gardens were not hurt and are now blooming profusely.

I have just returned from a tour through the middle and southern sections of the state where I found bees in better condition than they have been for years. In looking through some hives I found them in most instances with four and five full combs of brood. The very open winter and great honey flow of last fall did the work.

Colonies of bees are usually strong at this date, but not to the proportions that they have already reached this season. They are really in early-summer strength, and the workers are great enough in numbers to gather the willow honey flow, which will be coming very soon. In fact, some of the trees are blooming now (Feb. 28). The yellow jessamine in the hill country is blooming, and in the open country white clover is being worked on freely by the bees. It will take a very heavy freeze now, which is not looked for, to prevent a very large crop of honey this season. E. C. Davis.

Baton Rouge, La.

FROM NORTH, EAST, WEST AND SOUTH

In Mississippi.—On the date of writing the state is in the grip of a cold wave that may do some damage to bees, especially here on the Gulf Coast. Colonies examined yesterday averaged six frames of brood. Titi and willow are in full bloom. The citrus groves will be in bloom in about one week. If the temperature drops to freezing and endures for many hours, the bees will have to forsake a large portion of their brood. The beekeeper will consequently gather a shorter crop when black gum and tupelo bloom next month and when gallberry blooms early in May. The various species of Nyssa and gallberry are the sources of the best honey made in the Coastal Plain. I might add that these honeys are hard to beat for quality.

The advocate of packing would get a more attentive audience on a day like this. Perhaps in this section packing is not needed, but the Gulf offers no protection when a ''norther'' blows. And northers are not uncommon in this country. In three or four days, when it is warm and sunshiny again and all the chilled brood is carried out, the beekeeper will have forgotten that it was ever cold and ridicule the idea of protection. Perhaps he is right. We need some experimental work done to lead us out of our ignorance.

February was especially conducive to brood-rearing in north Mississippi, and colonies may be expected to be strong early. Bees were noticed working in great numbers on chickweed early in the month, the first time the writer has observed this lowly flower being worked. Bees have been working maple, elm and mustard. Last year's mustard plants were in full bloom early in the month and afforded the bees great delight. Mustard is used as a green in the South.

The sweet clover in the prairie section is in excellent condition. There seems to be an exceptionally large number of new plants from seed germinated in February. If only it were all Hubam! R. B. Willson.

Agricultural College, Miss.

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In North Carolina.—At this time (March 5) spring conditions are most promising in every way. Of course, there are several things that can befall the bees or the pasturage in this state, either to reduce seriously or cut off entirely the 1922 honey crop. Frosts a little later during critical periods of developments of the flora, protracted rain or disagreeable weather in the midst of these honey flows must always be considered as possible.

However, right now bees are demonstrating the fact that they have come through the winter in fine condition where they had anything like adequate supplies to start with, or have been fed. This applies in the case of careful beekeepers who use the modern hives. Of course, following the very lean honey season of 1921, probably thousands of colonies in old box or gum hives died out even before the real winter set in and many more are showing up ''dead'' this spring; but those losses can very readily be counted as a ''blessing in disguise,'' since such laggard beekeepers will have had a most impressive demonstration of the incomparable advantages of the improved hive and will adopt it far more readily.

Bees in even the weakest of the colonies that have ''wintered'' have been gathering pollen right along since early in January and for two weeks have evidently been getting in considerable honey from early peach or other fruit bloom and, in this section, particularly from the mistletoe, arbutus and others of the earlier flora. The maple will be blooming very soon now, and by April 1 the tupelo, black gum and holly will be coming in all along the Carolina Atlantic Coastal section. These will be followed by the gallberry in May. All these, of course, stand a chance to be curtailed or cut off entirely by cold or to have the bees kept away from them to a more or less serious degree by prolonged rains. But beekeepers are optimistic and are preparing, especially in the matter of having equipment ready at hand, to give the bees ample room for the husbanding of a bumper crop.

Wilmington, N. C. W. J. Martin.

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In Utah.—We are having a severe winter on this side of the Rockies. Up to Dec. 20 the weather was very mild, and bees were more active than usual, which caused them to consume more stores than they otherwise would have done. Since Dec. 20, measured as it fell, there has been seven feet of snow, and the temperature has been as low as 24° below zero. For weeks there were more hours when the temperature was below zero than above.

There has been no weather yet for a cleansing flight, and some colonies are showing signs of dysentery. There is still on March 11 20 inches of old snow on the level.

Many colonies are on their summer stands with no protection, and there must be a severe loss in all such cases. Part of my own bees are in the cellar; but 400 colonies are outside, packed, but not as they should have been for a winter like this.

During the winter I am assistant instructor to the federal men who are taking practical bee culture at the Utah Agricultural College at Logan, and yesterday we looked over the college bees as best we could without opening the hives. We found them in fair condition but showing some signs of dysentery.

Isn't Dr. Phillips right when he advises to prepare bees every winter for the worst?

Hyrum, Utah. M. A. Gill.

GLEANED BY ASKING

Geo. S. Demuth

QUESTION.—What is the best way to transfer from a Standard 10-frame hive to the Jumbo? I wish to save all the brood and have the bees ready for the honey flow. I have a new Jumbo hive ready with full sheets of foundation. C. E. Jeffrey.

Kentucky.

Answer.—Since you are changing to the Jumbo depth of frame you no doubt expect to produce extracted honey. In that event transfer two or three of the Standard combs, together with the queen, to the Jumbo brood-chamber as soon as the colony needs more room in the spring. Put the Jumbo brood-chamber on top (or below) the Standard with a queen-excluder between. Three or four days later or when the queen has begun to lay in the newly built comb in the Jumbo frames, shake all the bees off from the Standard combs which were in the Jumbo brood-chamber, to be sure that the queen is not taken away with these combs, and put them back into the Standard brood-chamber, filling up the Jumbo brood-chamber with the frames of foundation. As soon as the foundation is all drawn out, put the Standard brood-chamber on top (if it has been below) where it now becomes a super to be tiered up as other supers are added.

Age of Larvae for Queens.

Question.—After a colony is made queenless how long a time must elapse before it is impossible for it to rear another queen from the brood of the former one? William Thomas.

Missouri.

Answer.—After nine days the brood is all sealed, so it is certain that no queens can be reared after that time. If all queen-cells are destroyed before the ninth day, the bees will attempt to rear a queen from old larvae, even those almost ready to seal, if there are no younger larvae; but these, of course, would not result in a real queen, for the feeding period would be too short.

Maples as Honey Plants.

Question.—Do maple trees have nectar and pollen or pollen only? Gustav Stolze.

Connecticut.

Answer.—The different species of maple yield both nectar and pollen. The importance of the maples as honey plants is probably not fully appreciated. Because they bloom so early surplus honey is not often stored from this source. The red maples, the box-elder or ash-leaf maples and the silver maples are especially valuable, but bloom quite early in March and early April in the North. The sugar maple, which blooms later, sometimes yields large quantities of nectar. If the colonies are strong in the spring and the weather is favorable even for a few days when the maples are in bloom they sometimes store rapidly, sometimes gaining 20 pounds or more. This is where good wintering makes a great difference in the spring. It is not at all unusual to see strong colonies gain in their stores during bad weather in the spring, while weak colonies in the same apiary are starving. Strong colonies are able to send a large force of bees into the field whenever the sun shines for an hour or so and it is often surprising how much nectar they are able to carry in even during bad weather. Maples often yield freely while there is snow on the ground.

Age of Brood in Concentric Circles.

Question.—On a comb having concentric circles of brood of different ages, if the outside circle is pupae, the second larvae, the third pupae and the center is empty cells where young bees have just emerged, how many days has the queen been laying on this comb? John J. Valley.

Ohio.

Answer.—The queen has been laying on this comb for not less than 42 days. Of course, this process could be repeated so that she could have been laying on this comb much longer. You can figure this out by remembering that the brood is sealed about nine days after the eggs are laid and the young bees emerge about 21 days after the laying of the egg. The condition you describe is found only in very weak colonies or when there is but little brood-rearing, as in the spring or winter.

Feeding Honey Granulated in Combs.

Question.—What is the best way to feed up honey that is granulated in unsealed combs?

Montana. Myra Pickering.

Answer.—By filling up the cells with water and hanging the comb in the hive, the combs of granulated honey can be fed to the bees. The cells can be filled with water by laying the combs down flat and pouring on the water from a sprinkling can, or even by pouring the water from an elevation of four or five feet. An old pail with a row of holes punched in the bottom, five holes to the inch, is excellent for filling combs with water.

Spraying When Petals Begin to Drop.

Question.—We are moving an out-apiary to an orchard. The owner says that he sprays his apple trees with lime and sulphur when the petals begin to fall. Will this be detrimental to the bees if left in the orchard at that time or should they be moved away for a few days when the trees are sprayed? J. P. Williams.

Missouri.

Answer.—So far as known, lime and sulphur spray as used for spraying does not harm the bees in any way; but, no doubt the orchardist intends to add arsenic of lead for the spray applied when the petals begin to fall. For best results in spraying most authorities advise that the spraying be done after 90% of the petals are down. When this is done there is little if any danger of the bees being injured when arsenic is used; but, if applied when the petals first begin to fall, there is danger of poisoning some of the bees.

Combs Built Crosswise in Frames.

Question.—How can I fix the combs that are built from one frame to another so I can handle them? A. J. Hulse.
Indiana.

Answer.—Cut each comb loose where it is attached to the adjacent frame and then fasten it within its own frame by tying it in place with cord wrapped around the frame. If the first frame can not be removed from the hive without tearing the comb to pieces, cut all comb attachments on each side of the hive, then invert the hive and push out all the comb at once. After this is done, by beginning at one side each comb in turn can be cut from the neighboring frame and fastened within its own frame.

Number of Colonies for Pollination.

Question.—How many colonies will be necessary to insure a good setting of fruit in a 500-tree orchard? William Wadsworth.
New York.

Answer.—Much depends upon weather conditions during the blooming period, more bees being needed when the weather is unfavorable. In the West some recommend one colony per acre of orchard, but in the East it will be better to have at least two colonies per acre and more will be better.

Strengthening Weak Colonies With Young Bees.

Question.—If young bees are shaken from a comb taken from a strong colony in front of a weak colony, will they be kindly received on entering or will they be killed? Ella C. Miller.
Washington.

Answer.—Usually these young bees are kindly received early in the season, especially if there is nectar available. Not many bees should be added to the weak colony at a time, for if the number of invading bees is too large there is liable to be trouble. Later in the season, especially after the honey flow, it would not be safe to add young bees in this way, and sometimes even in the spring it may cause trouble. You can easily tell how the young bees will be received by trying only a few at first.

Stimulative Feeding in the Spring.

Question.—Is there any advantage in stimulative feeding for colonies that are not short of stores? W. M. Hathaway.
Michigan.

Answer.—In your locality stimulative feeding for spring brood-rearing would not often be advantageous. If the bees have an abundance of stores they will expand their brood about as fast as weather conditions will permit. Stimulative feeding is sometimes needed to keep up brood-rearing for a later honey flow in localities where the main honey flow comes sometime after the natural spring brood-rearing period, as in some parts of the West and South, but where the honey flow comes early this is not often needed.

Bees Carrying Out Brood.

Question.—Why do my bees carry out some of the undeveloped brood? T. L. Millard.
Pennsylvania.

Answer.—They are probably short of stores. It will be well to open the hive to see if they have any honey. If not, they should be fed at once. Brood is sometimes carried out from other causes, such as being chilled, but especially in the spring the carrying out of brood is often the result of famine.

To Get Rid of Crooked Combs.

Question.—If I put my old crooked built-together combs in the upper story and new combs and frames of foundation below, will the queen go below to lay eggs? If so, will they put honey in the old crooked combs or abandon them?
Indiana. E. H. Lenning.

Answer.—You will no doubt get better results by placing the chamber of new combs on top of the old brood-chamber. It will be better still if at least one comb in this new brood-chamber is old and dark. Queens usually prefer old dark combs, and in the Standard hives they are more inclined to work upward into a second chamber, when more room is needed, than to go into one placed below. When the queen is found above, an excluder should be placed between the two stories to confine her in the new brood-chamber. Some time after the brood has all emerged below, the lower brood-chamber can be taken away. It should then be practically free of honey. If it were left on top, the bees would fill the crooked combs with honey instead of abandoning them. You could smoke the bees out of the old brood-chamber into the new, and then put a queen-excluder between, before the queen could go back if you prefer to have the new brood-chamber below; but, if foundation is used in the new brood-chamber, better combs will be built if in the upper story.

To Keep Brood-chamber Free of Honey.

Question.—For comb-honey production how can I keep the brood-chamber free of early honey to give the queen plenty of room to lay, and reduce the desire to swarm without extracting the honey?
New York. Harold Edwards.

Answer.—Usually the trouble is in not having enough honey in the hive in the spring. Sometimes when they seem to be crowded, great slabs of sealed honey will disappear within a week and the combs filled with brood. Since it requires nearly a comb of honey to make a comb of brood, this early honey is usually not in the way of rapid brood-rearing in the spring if the colonies are strong. When the brood-chamber does become crowded with too much honey or even before, they should be given a second story of old dark combs if these are available. If these combs are partly filled with honey all the better, for the honey may be needed later. Combs heavy with honey can be lifted up into the second story and empty combs put in their place below. At the beginning of the honey flow most of the brood can be put in one story and the other taken away.

TALKS TO BEGINNERS

Geo. S. Demuth

THOSE who have secured their colonies of bees and moved them home, as advised in the "Talks" in the February and March issues, will be interested to note the activity of the bees during the first warm days in April. In the South the colonies are already rearing large numbers of young and becoming quite strong. In some places they may swarm this month; but, in the North, brood-rearing will only get well under way during April. It is time now, both north and south, for beginners to become acquainted with the bees themselves and, especially in the South, learn to handle them.

Meaning of Things Seen at the Entrance.

By noting the bees at the entrance it is possible to tell several things about the colony without opening the hive. Sometimes the number of bees in flight near the entrance is much greater than at other times. These periods of excessive flight do not necessarily mean that the bees are working more than usual. After they have been confined to their hives by bad weather for some time the bees will rush out in great numbers for a cleansing flight or for a little playflight in the sunshine. Also, when young bees begin to emerge in great numbers, the playflight of these youngsters will be noticed, this usually taking place early in the afternoon. In either case this extra flight soon subsides, and the more moderate flight of the regular work continues.

Unusual activity at the entrance also occurs when bees are robbing; but, if the colony is strong and has not just been disturbed by opening the hive, there is no good reason to suspect that these extra bees in flight are robbers from neighboring colonies. Bees in robbing behave differently in flight from bees taking a cleansing flight or a playflight, and it is well for the beginner to know this difference. Unlike the inmates of the hive, robber bees are cautious and alert on entering, but heavy with stolen honey and anxious to escape when they come out. Except in the case of very weak colonies which are not able to defend themselves against robbers, and queenless colonies which sometimes cease to defend their hive, robbing is usually the fault of the beekeeper in exposing the combs too freely when opening the hives at a time when the bees are not able to find much nectar in the flowers.

By noting the regular work of the field-bees as they come and go, it is possible to judge as to the strength of the colony. By noting the manner of flight one can tell whether they are finding nectar in abundance or but little if any. Bees that are heavily laden with nectar are less alert than empty bees and can readily be distinguished by their manner of alighting and entering the hive. Note the number of bees entering the hive with little balls of pollen attached to their legs. These can easily be seen as the bees run in at the entrance, each pollen-carrier carrying two pollen pellets. The ancients thought these were tiny pebbles which the bees carried for ballast, but we now know that they are balls of pollen which the bees have gathered from the flowers and packed in the little hairy baskets on their legs. Pollen furnishes the nitrogenous portion of the diet for the rapidly growing bee larvae and is essential for brood-rearing. By noting the color of the pollen and then watching the bees at work in the fields or forest, the inquisitive beginner soon learns to distinguish pollen from different flowers since it varies greatly in color.

When to Open the Hive for Examination.

Usually it is best not to open the hives unless necessary until fruit bloom; but, by choosing a warm day when the bees are working well on some early blooming flowers, hives can be opened without injuring the colonies this month, even in the North. Colonies, that are packed for winter in such a manner that it is necessary to unpack them for examination, should be left alone until some time in May in the North, unless there is reason to believe they are short of food when, of course, they should be examined and fed if necessary. Beginners should not attempt to open hives to examine colonies when the weather is cool or when the bees are not working freely. Neither should they attempt this early in the morning or late in the afternoon at this season, for it is much easier to handle bees without being stung during the middle of the day when it is warmest and when the bees are working most freely in the fields.

How to Open the Hive.

With the smoker lighted and going well and with the bee-veil carefully adjusted so no bees can get under it, approach the hive at the side, not in front. Give a light puff or two of smoke at the entrance, just enough to subdue the guards. This is not always necessary, but it is a good precaution until one learns when it can safely be omitted. Take off the outer cover and the cushion or tray that holds the winter packing if one is on the hive, and then insert the chisel-like end of the hive-tool under one corner of the inner cover, lifting it not more than an eighth of an inch, so smoke can be blown through the crack before any bees can get out. Next, treat the adjacent corner in the same way and then slowly lift the end of the cover thus loosened, at the same time blowing smoke under it to drive the bees down between the top-bars. The cover, with its adhering bees, should now be turned upside down at the entrance, so these bees can readily crawl into the hive.

How to Avoid Being Stung.

Only enough smoke should be used to keep the bees down between the combs and under control, since too much smoke confuses them and makes them more difficult to handle. The smoker should be going well, so it will respond with a good volume of smoke whenever needed. Smoke is needed only a part of the time. Sometimes it is necessary to use it only a few times while examining the colony, but at other times it is necessary to use it frequently. Smoke should be blown across the tops of the frames, not directed down between them. By watching the bees one soon learns when more smoke is needed. The bees should not be permitted to line up in rows between the top-bars of the frames with their heads at the upper edge, watching every movement of the operator. Whenever such a formation is seen they should be driven back with smoke. Avoid quick motions. Bees pay but little attention to slow movements, but resent quick motions. The beginner will work with greater confidence at first if he wears a pair of good bee-gloves, but later will probably not care to use them. The smoker and veil are essential. If careful about the use of smoke one can examine colony after colony without being stung if the bees are working well. If the combs are self-spacing, the whole set can be pried over toward the opposite side of the hive, by using the hive-tool as a pry, to make room to take out the first frame. Sometimes it is easier to take out the outside frame first; but in many cases it is easier to remove the second or even the third frame first on account of the character of the combs, especially if they are bulged with honey at the top. Pry the frames apart far enough so the first one can be taken out easily and then lift it gently, being careful not to roll the bees against the adjacent comb. When the first comb is out, stand it on end leaning it against the hive; or, if there is danger of robbing, put it into an empty hive or a box made to hold two or three combs. Such a box is quite handy for beginners, and its use will often save trouble from robbers, or from combs toppling over when they are stood up against the outside of the hive. It is a good plan to put the first two combs taken out into this box.

The other combs can now be taken out separately by prying each one loose in turn and pulling it away from the adjacent comb before lifting it out of the hive. To examine the opposite side of the comb, hold the frame by the projecting ends of the top-bar, bring the top-bar to a vertical position, then turn the comb using the top-bar as a pivot, and finally bring the frame back to a horizontal position but upside down. Reverse this process to bring the frame back right side up ready to be put back into the hive. This movement keeps the comb in a vertical position while being reversed. It is not always necessary when frames are well wired, but it is a good habit to form when first learning to handle the combs.

What to Look for Inside the Hive.

The outside combs should be heavy with honey if the colony is well supplied with stores while most of the brood is in the middle of the hive. In the South strong colonies should now have brood in all the combs except possibly the two outside ones, but in the North brood will usually be found only on two or three frames early in April.

On a comb taken from the middle of the brood-chamber, there is usually some sealed honey in the upper corners, the cells containing the honey being elongated, so this portion of the comb is thicker than the rest of it. Just below the sealed honey there may be a little recently gathered honey not yet sealed over. Just below the honey there may be a narrow band of cells containing pollen packed in open cells. In the middle of the comb look for another area of sealed cells, the cappings being brown in color and so regularly formed that the outline of each cell is clearly shown. This is sealed brood, as may easily be proven by tearing away some of the cappings, exposing to view the pupae within the cells. Note the difference in the appearance of the cappings over the brood and those over the honey. Somewhere within this area of sealed brood there may be some young bees emerging from the cells after cutting away the capping. In the open cells just beyond the sealed brood, look for the large larvae coiled against the base of the cells. Beyond these will probably be found smaller and smaller larvae toward the edge of the comb until finally it is difficult to see them. If the bees are behaving well, it will now be safe to lift up the bee-veil to permit better vision, which will probably be necessary to see the tiny eggs in the cells beyond the smallest larvae. To see these, hold the comb so the light from the sun comes over the shoulder and shines into the cells, and then turn the comb until the strong light strikes the base of the cell. After once having seen them it is no longer difficult even when looking through the bee-veil.

Note the uniformity in the position and the distribution of the eggs, one in each cell as far as the queen has gone in her work of egg-laying. This uniformity indicates a vigorous queen. This concentric arrangement of the brood of different ages is found only early in the season before there is much brood and in colonies that are too weak to rear brood extensively, for in strong colonies later in the season the queen sometimes fills a comb with eggs within two days so the brood on the entire frame is practically the same age. This should be the condition now in the South, while in the North the concentric arrangement is the rule for April.

Beginners are usually surprised to note the dark color of the brood-combs. This is due to their age and the accumulation of portions of the cocoons spun by the young bees while in the pupal stage. These dark combs are just as good as new ones for the brood-chamber, if not better.

Some of the cells have a greater diameter than others, the smaller ones being about one-fifth inch in diameter and the larger ones about one-fourth inch. These smaller ones are called worker-cells because worker bees are reared in this size, while the larger ones are called drone-cells because drones are reared in them. There should not be more than a few square inches of drone comb in a hive, this usually being in the lower corners of the frame. No drone brood is reared in normal colonies until they become strong in the spring. The large drone larvae can readily be distinguished from worker larvae, and the sealed drone brood has peculiar projecting convex cappings quite different from sealed worker brood. The adult drones, if any have emerged, can easily be distinguished from the workers by their larger size, being thick, heavy-set bees with large, powerful wings. They are not armed with a sting and can be picked up with the fingers with perfect safety. The drones are the male bees.

Queen-cells are built separately or in clusters of two, three or four cells. They project from the comb in a vertical position, resembling a peanut shell in size and appearance. Queen-cells are built only when the colony is preparing to swarm or when a young queen is needed to supersede the old one.

If each comb is carefully examined on both sides the queen can be found. She is the mother of the entire colony, her sole business being that of laying all of the eggs to produce the many thousand workers, the drones and at swarming time the young queens. She can readily be distinguished by her larger size and her long tapering body. Sometimes she will continue her work of egg-laying while the operator is holding the comb, especially if the bees have not been frightened by too much smoke or rough handling.

How to Clip the Wings of the Queen.

It is a good plan to clip the wings of the queen before swarming time to prevent the swarm going away if it issues when there is no one at home. To do this pick her up by grasping her wings between the thumb and forefinger of the right hand, then transfer her to the left hand where she is held by grasping her feet (several of them) or thorax lightly between the thumb and forefinger. Now with the right hand pick up a pair of small scissors and carefully cut off about two-thirds of both the wings on one side, then drop the scissors, take hold of the remaining wings with the right hand and set the queen on her feet back on the comb. This does not injure the queen if it is carefully done.

Examination Reveals Condition of Colony.

An examination of even a few of the brood-combs tells many things about the condition of the colony. By estimating the amount of honey in each comb the operator can tell whether there are enough stores for safety. There should be enough honey to fill completely at least two or three combs constantly on hand as a reserve supply except during a honey flow when the bees are gathering freely from the flowers. If there is brood in various stages of development in compact form and uniformly distributed, the colony has a vigorous queen. It is not necessary to see her to know this. If the combs are all nearly filled with brood, honey and pollen, the colony is strong enough for a second story or the supers if in the South. The presence of drone brood in the lower corners of some of the combs indicates that the colony is strong and prosperous. The presence of queen-cells having larvae or pupae in them is an indication either that the colony is preparing to swarm or is rearing a young queen to supersede the old one. In the spring if the colony is prosperous, the building of queen-cells usually means that a swarm will issue within a week.

Important Things To Do in April.

In the northern states colonies that have plenty of stores at this time will need no further attention until about the first of May, except to see that the cover fits down snug and warm and that the entrance is blocked down to an opening about three-eighths by two inches when it is cold. In the southern states, brood-rearing being well under way, the most important things this month are to see that the stores do not run low and that the bees have all the room they need for brood-rearing. If feeding is necessary, the feed can be given as described last month. If more room is needed, a second story should be given without the queen-excluder between if extracted honey is to be produced or even for comb honey if the main honey flow does not come until later. This second story given early usually holds back swarming, at least until the beginning of the main honey flow.

Those who expect to start colonies from package bees, if in the latitude of Pennsylvania, Ohio, Indiana and Illinois, should arrange to have the bees arrive soon after the middle of April. For New York, Ontario, Michigan, Wisconsin and Minnesota it is usually better to have the bees arrive about the first of May. When the bees arrive they should be put into the hive according to directions sent with the package. Combs containing honey and pollen or even empty combs are much better to hive the package bees on than frames filled with foundation; but, if such combs are not available, frames containing full sheets of foundation can be used, the bees, however, being fed a pint of sugar syrup every day or two until they are able to obtain nectar from the fields.

OUR HOMES

A. I. ROOT

Blessed are the pure in heart, for they shall see God.—Matt. 5:8.

Who hath measured the waters in the hollow of his hand, and meted out heaven with the span?—Isaiah 40:12.

What manner of man is this, that even the winds and the sea obey him?—Matt. 8:27.

Let him know that he which converteth the sinner from the error of his way shall save a soul from death, and shall hide a multitude of sins.—James 5:20.

OUR older readers may recognize that the story I am about to tell of a wonderful and not only prompt, but "long-distance," answer to prayer, is one I have told already, perhaps more than once. After my "craze," as some people called it, for starting Sunday schools I started a sort of Sunday school in our county jail. Medina had saloons at that time, and, as a matter of course, there was quite a class in our jail most of the time. The crowd I found there started to make fun of me with their rude jests and even blasphemous and filthy stories. One day when they would hardly listen to my talk I got hold of a piece of paper and pinned against the wall, after I had written on it, "Blessed are the pure in heart, for they shall see God." It seemed to have a good effect; and when I got them to singing some of those beautiful Gospel Hymns (for this was when Moody and Sankey first became known to the world at large) they soon learned to enjoy the singing if nothing else. One of them was a boy or a man, perhaps 20 years of age, who had been in the penitentiary for stealing chickens; but as soon as his time was out he was caught again for the same offense, and was on his way to the penitentiary. He openly boasted that they might carry his dead body back to that "old pen," but they would never carry him alive. It somehow happened that he was kept in jail three or four months, and he and I became pretty well acquainted. I visited him not only every Sunday, but often during the week, and it was finally my privilege to get him to kneel down on the stone floor and utter the prayer, "God, have mercy on me a sinner." He had no money to employ a lawyer. I said to him, "Fred, the great God above is worth more than all the lawyers on the face of the earth. Instead of trying to screen yourself, you tell the whole truth and God will take care of you."

Fred did so, and the judge astonished the court by saying, "Gentlemen, we send our boys to the state prison to make them better. I will personally guarantee that this young man will be 'better' without any penitentiary sentence."

The next morning Fred surprised me by coming into my store and saying, "Mr. Root, it turned out just as you said, and I am here a free man. You are the only friend I have in this town, and almost the only one I have in the world. Can you set me at work at something?"

I started him at setting type for our little bee journal, and a considerable part of Gleanings in Bee Culture away back when it was young bore the imprint of the type he set. I was then in the jewelry business, but was not yet able to buy a safe in which to store my valuables at night, and so I had an apprentice sleep in the store close up to the showcase. This apprentice fell sick, and so I asked Fred to take his place. He did not say very much; but just as I was going home that night he leaned against the showcase and said, "Mr. Root, how much are all these watches and other things worth which you leave here over night—a hundred dollars or more?"

"Yes, Fred, two or three hundred dollars."

"And you want me to sleep here and take care of them?"

I nodded assent, and then he said, with trembling voice, "Mr. Root, do you consider that just a few weeks ago I would have jumped at the chance of loading this up and getting away off before morning?"

I smilingly remarked, "Fred, are you at all afraid that your old temptations will come back?"

Then he began to cry as he leaned over the showcase. I do not know that I ever saw a man cry like that before; but he finally stammered out, "Mr. Root, so long as God lets me live I will defend everything that belongs to you or yours, even if it takes my last drop of blood."

Fred afterward carried on successfully one of our out-of-town Sunday schools. Let me now digress a little:

People thought me crazy away back in those early days when I paid $20.00 for one queen bee; and when I took a chicken thief out of jail and installed him in my store to look after the watches and jewelry by night, they for the most part lost confidence in me. The story got to going around town, and all at once I found I could not borrow a cent of my friends right or left; and yet that first brick factory had its walls up, and was ready for the roof. The man who furnished me the brick had agreed to give me reasonable time; but he became alarmed, and finally said that if he could not have his money by a certain date he would make me trouble. My property was all mortgaged, and my good old father's farm was mortgaged all it would bear. Then I said, somewhat in desperation, that I would let the building stand without any roof over winter, if people were so afraid of me. Of course I prayed over it, but as yet I had received no wonderful answers to such a prayer. To make the matter worse, I had been getting other boys out of jail; but they had not all turned out like poor Fred. Some of them who were addicted to drink made me quite a little trouble and worry, and even Mrs. Root said, ''Dear husband, haven't you been a little reckless in getting those boys out of jail who worry you so much and wear you out?''

I replied as before, ''Sue, we will just kneel down and ask the dear Savior if I have been wise or otherwise;'' and I asked Him to indicate it by opening the way for the money to pay the man for the brick, and which I had told him would be ready by next Thursday.

Then I went to sleep feeling sure I was right. The next day a stranger came, very anxious to see what I had done to encourage bee culture. He was particularly anxious to see a colony of bees taken from a box hive and transferred to a frame hive. Altho it was the wrong time of year, and I was exceedingly busy, I had a colony transferred. The new factory was half a mile away from my store in town. On the way back he surprised me by asking me if I was having any financial trouble. I stopped suddenly, and then he apologized by saying, ''There, Mr. Root, I fear I have taken too much liberty; but I wanted to say that if you were in need of money just now I could, perhaps, repay you for all the pains you have taken to show me around when you are so busy.''

I replied, ''My friend, are you a professing Christian?''

He replied that he was not.

''Then,'' said I, ''you certainly ought to be, for God has sent you here in answer to prayer.''

Then I told him all the particulars, and in explanation he said something as follows:

''I subscribed for your little bee journal, and was very much pleased with it. One night I could not sleep because I got to thinking of you, and wondering if you had the funds to go on with your experiments. Then I thought that nothing else in the world would please me so much as to make you a visit. Imagine my surprise when I mentioned it to my father next morning, and he replied something as follows: 'Why, George, this is indeed lucky. There is a lot of tanbark down in the city of Cleveland which has been offered to me at a very reasonable price. But I dare not close the bargain without seeing it. Now, you know as much about the tanbark we handle as I do. You go right down there and look it over, then go down to Medina and see Mr. Root'—and here I am.''

Said I, ''Mr. Goodhue, if you are not a Christian you ought to be.''

I think his reply was just a brief statement, ''Like enough.''

I am glad to tell you that he shortly afterward not only became a follower of the Lord Jesus Christ, but a Christian worker. I told him when the brickmaker wanted his money; and after figuring a little he said, ''I think I can be sure to have it here by next Thursday if not before.''

Of course my good father was greatly worried by the state of affairs. When I told him of the above he first said, as everybody else did, ''Why, that man is not going to send you a lot of money without security.''

But I still insisted that there would be no failure; but father replied, ''Why, the mails will be delayed. This is a bad time of the year, and trains may be delayed.''

I replied, ''Father, God holdeth the winds and the waves in the hollow of his hand.''

I think that father then caught a glimpse of my faith, for he went back home smiling and happy.

Thursday morning came, but no hint of the money. But I did not worry. I told the young lady who started to open the pile of mail, ''I am expecting a letter from Quebec in this mail. When you come to it let me have it.''

In a few minutes a letter came sailing over to my desk with the remark, ''Here is your Quebec letter.'' I opened it and read, ''Pay to the bearer, A. I. Root, the sum of $500 in gold, and charge to the account of George O. Goodhue.''

Just a little later along came the brickmaker with a severe look on his face, saying, ''How about that money?'' I replied smilingly that it was ready for him. His countenance changed in a minute. Said he, ''Why, Mr. Root, have you got it?'' I assented, and went over to the bank with him. You see his mind had been poisoned by so many telling him he would never get his money. I think the amount was a little over $400. The bankers were surprised; but I think it was a glad surprise to some of them. The cashier was a particular friend of mine; and I said to him, ''Robert, I suppose it is against your rules, but I should like to borrow that check for a little while.''

He smilingly asked what I wanted to do with it. I told him I had been telling the boys over in the jail the story of my lack of finances, and how money was coming, and coming without my giving any security, from a man away off in Quebec. Of course this was soon noised abroad all over the town; and those who had refused me accommodation were surprised that a perfect stranger away off in Quebec should lend me money without security when none of my own townspeople would take the risk.

Let us go back a little. You have doubtless read these stories of answers to prayer. First, when I started out to unite our Medina churches I prayed over it, and one of God's minister servants changed his mind almost in an instant. Second, when I had that strike in regard to the tobacco matter, quite a respectable crowd of people changed their minds almost in an instant. It seems that the dear Savior was teaching me faith by degrees—first the single individual, then a crowd of people, then by a good man away off in California, and finally a good friend sprang up away off in Quebec and furnished me money without security, and made it reach me on a certain day. The Holy Spirit seemed to be leading me along these paths by easy steps as one would teach a child. When I asked the Lord if I was on the right track in kneeling with those poor boys from the jail he answered my prayer so swiftly that it almost frightened me.

Now a word in regard to those in the jails of our land. Just recently I read of a guilty criminal who was on his way to the penitentiary. The judge was a professing Christian, and he finally said to the Christian man who caught the culprit red-handed, "Now, my good friend, I believe I will turn this matter all over to you. In fact, it rests with you to go on with the trial or not." And this Christian man turned to the guilty man and said, "Look here. Billy Sunday has just commenced a series of meetings in our city. You go and hear him. Do not miss a session; and if you will do it faithfully, when the meeting closes you are a free man."

What do you suppose happened? The poor fellow gave his heart to the Lord, and is now following Sunday and helping the revivalist in his work.

*Can the Ethiopian change his skin, or the leopard his spots?—JERE. 13:23.

Hubam in Florida.

No clover of any kind, not even alfalfa, will stand our hot, wet summers. A few cases have been found where it *sometimes* gets through; the season isn't long enough. But the Hubam is O. K. Nov. 1, 1921, I sowed four rows, perhaps 100 feet long. On March 1, 1922, it is higher than I can reach—some of it—and full of bloom and bees. The entire growth was made during December, January and February. We are going to sow it on all our potato ground as fast as the potatoes are dug. We shall probably spade it all under to enrich the ground for potatoes next winter. Our new potatoes are wanted (once more) faster than we can furnish them, at 75c for a ½ peck basket.

Mr. A. I. Root, Bradentown, Florida.

Dear Mr. Root:—Who am I, to be writing you now? What can I, who am so much younger, say at this time to you, who has lived for so long so near to God? How can I tell you where to turn for comfort? Ah, dear friend, whom I do not know, God comfort you in these days of loneliness! Well I know where your faith lies, and how firm and great is your belief in the "many mansions." But for the inexpressible personal loss, may God Himself comfort and sustain you.

I never thanked you for your note of last fall. I do so now. The regret that I felt at that time because you were not to pass thru Nashville has deepened now. How I wish I might have met her. How I hope I may yet meet you and tell you more fully what now I can only suggest, my deep admiration for you and for her memory, and my heart full of sympathy for you today.

Over against your sorrow you have a wealth of memories—what rich lovely ones they must be! —and an even greater wealth of faith and hope. To these may I add, humbly but affectionately, my own deep sympathy and that of my husband. God bless you! Grace Allen.

Route 9, Nashville Tenn., Dec. 15, 1921.

TO A. I. ROOT

On the Sudden Death of Mrs. Root, Aged 80.

A HOMEMAKER TAKEN WHILE AT WORK.

How steadily God's winds go blowing
Wherever they are sent!
I had not thought about her going
Before you went.
But who can trace the holy thought
Whereby God's purposes are wrought?
Perhaps He watched her working there,
And said, "Come now, dear Child,
I've other work anotherwhere"—
And took her hand, and smiled.

(For in God's plan how can we know
What service still may be?—
What bread to bless, what fields to sow,
What shores of what great sea
To watch for homing sails?—What room
To fill with some undreamed-of bloom?
What oil to pour, what lamps to trim
And in what windows high
To set them on old roadways dim
To light God's children by?)

For sixty years, when sunset flame
Had homeward set your feet,
You found her there and called her name
And found home very sweet.
And when at close of longer day
Again you wend a Homeward way—
And find her there—what tho you stand
Rapture-hushed and dumb?
She will take you by the hand
And tell you where you've come.
She will call you by your name
And say how glad she is you came,
And say, "Great things are here to do!—
In soul and star and loam—
And here is God!—And here are you!—
And here is Home."

—Grace Allen.

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H. G. ROWE, Mng. Editor.

Sworn to and subscribed before me this 17th day of March, 1922. H. C. WEST Notary Public.

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Following is a list of contributions to the Miller memorial fund, as shown to date by the records in this office. Several foreign countries are raising funds, which have not been reported to the fund committee in this country.

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F. C. Wiggins	1.00
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Name Unknown	5.00
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John Hansen	1.00
C. E. Lindsay	1.00
C. E. Kendle	.50
John Pugh	1.00
F. C. Drexel	5.00
Minnesota Beekeepers' Assn.	15.00
F. B. Loomis	2.00
R. A. McKee	2.00
W. C. Conrads	.50
S. O. Gordon	.50
Dr. A. Wright	1.00
L. B. Smith	.50
J. W. Jackson	.50
C. C. Stone	.50
T. J. Hughes	.25
W. O. Victor	5.00
C. E. Welty	.50
P. S. Nichols	1.00
M. B. Antle	.50
F. P. Nash	1.00
Albert T. Allen	.10
L. S. Jackson	1.00
Montg. Co. B. K. A. of Ohio	26.35
E. T. W. Baur	1.00
Alabama State B. K. A.	12.20
D. L. Calvert	3.00
F. W. Steele	1.00
I. Steddom	1.00
M. C. Thompson	1.00
S. C. Rising	1.00
Worcester Co. B. K. A., Mass.	16.00
Chas. Snack	5.00
F. W. Schroeder	1.00
R. B. Willson	5.00
F. A. Koch	.25
J. W. Jackson	1.00
Mr. and Mrs. A. Allen	5.00
Geo. H. Rea	3.00
R. E. Rydberg	1.00
H. G. Rowe	5.00
Geo. S. Demuth	10.00
A. I. Root	20.00
E. R. Root	20.00
H. H. Root	10.00
Total	$1233.18

GONE HOME.

Dr. C. C. Miller of Marengo, Illinois.

(By Frederick Webley, M. D., E. San Diego, Calif.)

Now he has passed beyond the bourne, we know
Why brothers of the Bee Craft loved him so.
As Homer said of one: "It was his plan
To live beside the road, a friend to man."
He did not seek for honor or renown,
But as a knight sought virtue as a crown.
He showed us how to leave the city's strife
And free, with Nature, live the Simple Life.
At Home with friends, his garden and his bees
He found his work and happiness and ease.
In heart he knew the consecrating grace
From God's own heart, his strong abiding place.
Kindly and gentle, noble and sincere;
His life, in passing, left its fragrance here.

He was a Master of the Gentle Craft
The happy bee folks follow. Once a draught
He drew, in his bright youth, from Nature's well
(Sweet as the Hippocrene, poets tell,
Flowed from Parnassus), and his heart indrew
Love for the Beautiful, the Good, the True,
And love for all things living, flowers and trees,
The birds and furry folk—but most the bees.
Was it from them he glimpsed of God's design
Of Social Brotherhood, but made divine?
For him a host of workers, on swift wings,
Brought sweetness from the living heart of things;
It seemed that all the bees of Arcady
Gathered to help him and his skill repay.

What meetings and what greetings his to know,
Where blessings, sweet as milk and honey, flow.
Huber and Langstroth welcome him as one,
And Cowan, with the gentle Hutchinson.
'Tis sweet to find that Faith is lost in Sight,
And Hope fulfilled in infinite Delight.
'Twas so with him when he had crossed the stream
He met the loved and lost ones of his dream;
And One, his Angel, smiling, took his hand
And led him upward to the Radiant Land.
There will he rest, his earthly labors done.
For him the Life Immortal—just begun.

Classified Advertisements

Notices will be inserted in these classified columns for 50c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column, or we will not be responsible for errors. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

H. E. Graham, Rosedale Apiaries, P. O. Watkins, Wm. Vollmer, A. S. Tedman, Southland Apiaries, A. H. Patch, Miller Box Mfg. Co., C. B. Howard, A. L. Healy, J. N. Harris, Griggs Bros. Co., H. B. Gable, C. N. Flansburgh & Son, H. R. Fisher, Geo. W. Coltrin & Son, Luther Burbank, R. H. Shumway, D. Hill Nursery Co., Condon Bros., Rhodes Mfg. Co., S. M. Isbell & Co., I. Putnam, James Vick's Sons, Storrs & Harrison, May Seed & Nursery Co., Smith Typewriter Sales Co., C. M. Elfer, Valley Apiaries.

HONEY AND WAX FOR SALE

400 LBS. of best crude beeswax in cakes. Edw. A. Winkler, Joliet, Ills.

FOR SALE—Fine quality white honey in 60-lb. cans. F. C. Gentz, Blackwell, Wisc.

FOR SALE—White clover and aster honey in 60-lb. cans and ten-pound pails. John S. Field, Brooksville, Ky.

FOR SALE—Clover, amber and buckwheat honey, 60-lb. cans and 5 and 10-lb. pails. C. J. Baldridge, Kendaia, N. Y.

FOR SALE—10 cases 120 lbs. each clover extracted honey, $15.00 per case, f. o. b. Grafton. F. E. Schriver, Grafton, O.

FOR SALE—Buckwheat honey in second-hand cases, 120 lbs., $9.60 each. Sample, 10c. R. V. Cox, Sloansville, N. Y.

FOR SALE—25 tons fine extracted white clover honey at 12c. Comb honey prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

EXTRA FANCY clover honey, well ripened, in new cans, per case 120 lbs., net $15.50. Write for quantity prices. Edw. A. Winkler, Joliet, Ill.

FOR SALE—12,000 lbs. of choice white clover honey, well ripened, put up in new 5 and 10 lb. pails. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—Buckwheat honey in 60-lb. cans, one can to case, liquefied, $5.40; two cans to case, granulated, $9.60. John J. Lewis, Lyons, N. Y.

FOR SALE—Seven cases clover honey that has gone through the capping melter at $7.50 per case of two 60-lb. cans. J. D. Beals, Oto, Iowa.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gal. barrels. Samples and price on request. A. I. Root Co., 23 Leonard St., New York City.

FOR SALE—Extracted honey, clover, 15c per pound; amber, 10c; two 60-lb. cans to case; amber in barrels, 8c; in five-case or five-barrel lots, 5% off; in ten-case or ten-barrel lots, 10% off. H. G. Quirin, Bellevue, Ohio.

HONEY FOR SALE—In 60-lb. tins, water-white orange, 15c; white sage, 13c; extra L. A. sage, 11c; N. Y. State buckwheat, 10c, for immediate shipment from New York. Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE—White clover honey in 60-lb. cans at 12c per lb., same honey in 5-lb. pails at $10.00 per doz. f. o. b. Waterville, Ohio. F. W. Summerfield, Waterville, Ohio.

FOR SALE—Limited amount choice white clover basswood honey in 10-lb. pails cases of 6 pails each. Write for prices. The A. I. Root Co., 230 W. Huron St., Chicago, Ill.

FOR SALE—Extra-choice extracted white clover honey, put up in new 60-lb. cans and 5-lb. pails. Sample 20c, same to apply on first order. David Running, Filion, Mich.

RASPBERRY honey, blended with willow-herb, put up in 60-lb. cans. In order to close out quickly will sell for 12c a lb. We have some raspberry mixed with a small quantity of goldenrod for 10c a lb. Sample of either kind, 20c, which may be deducted from order for honey. Elmer Hutchinson & Son, Lake City, R. D. No. 2, Mich.

HONEY AND WAX WANTED.

WANTED—Fancy white clover comb honey. Quote price. C. J. Morrison, South Bend, Ind.

WANTED—Honey, section, bulk comb and extracted. Elton Warner, Asheville, N. C.

BEESWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

WANTED—Beeswax. We are paying 1c and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address, so we can identify it immediately upon arrival, and make prompt remittance. The A. I. Root Co., Medina, Ohio.

FOR SALE.

ROOT'S GOODS AT ROOT'S PRICES. A. W. Yates, Hartford, Conn.

USED 60-lb. honey cans, 60c a case of two. Matt Smith, Preston, Iowa.

HONEY LABELS—New designs. Catalog free. Eastern Label Co., Clintonville, Conn.

BEEHIVES in flat, made of No. 1 long leaf yellow pine. R. E. Jordan, Jr., Halls, Tenn.

YOU will make no mistake in ordering your comb foundation of E. S. Robinson, Mayville, N. Y.

FOR SALE — "SUPERIOR" FOUNDATION, "quality unexcelled." Let us prove it. Order now. Superior Honey Co. Ogden, Utah.

PORTER BEE-ESCAPES save honey, time, and money. Great labor-savers. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

ADAPTABLE BEEHIVES are sound in principle and are practical. For free information address Geo. P. Wood, Peekskill, N. Y.

FOR SALE—Good second-hand 60-lb. cans, two cans to a case, boxed, at 60c per case, f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., Cincinnati, Ohio.

FOR SALE—Capping melter and separator can, from Ham Bros. In good order, used one season only, f. o. b. Hawkestone, $12.00. A. S. Millard, Hawkestone, R. D. No. 2, Ont., Can.

ROOT'S bee goods at factory prices. Everything for the beekeeper. Ask for catalog. S. M. Wilkes & Co., W. E. Tribbett, Asst. Mgr., Staunton, Va.

FOR SALE—25 dovetailed honey supers with all fixtures. A quantity of cartons for sections. All fine shape. Number of feeders and queen-excluders. All for $10.00 cash. Frank Quackenbush, Harvard, Ill.

FOR SALE—55 two-story standard metal-covered, 10-frame beehives, nailed and painted, frames nailed. wired with full sheets of foundation. In lots of five or more, $5.00 each f. o. b. Mobile. H. A. Goering, Crichton, Ala.

FOR SALE—25 eight-frame Root hives, slightly used, clean, two-story high, metal covers and with under covers, Danz. bottoms, newly painted, in one lot, $75.00. A rare bargain. Edwin G. Baldwin 55 Division St., Ashtabula, O.

FOR SALE—To further reduce our large equipment, we offer a full line of NEW and SLIGHTLY USED Jumbo and standard Langstroth bee supplies of Root manufacture. We also offer full colonies of bees in Jumbo and Langstroth hives. Complete list free. We can save you real money. No disease. The Hofmann Apiaries, Janesville, Minn.

FOR SALE—56 new dovetailed 10-frame comb honey supers complete with six section-holders and two shallow extracting frames to each super. All nailed and painted two coats. 50 never been used; also 3350 Root sections for same, 4¼x4¾x1⅜. We offer these choice goods all securely crated and delivered f. o. b. cars Epes, Ala., for $90.00. Can you beat it? Running & Manley, Sumterville, Ala.

FOR SALE—Root goods, all new and bright KD. 450 P fences, $20.00; 200 plain section-holders, 4¼x1½, $7.00; 200 beeway section-holders, 4¼x1⅞, $7.50; 100 Danz. extracting frames, $3.00; 5 10-frame, 2 8-frame Excelsior and 8 8-frame ventilated covers, 50c each; 2 Junior smokers, 75c each; 2 Parker foundation-fasteners, 30c each; 2 spur imbedders and 10 steel wheel foundation cutters, 15c each; 70 Van Duesen hive clamps, $1.00. Chauncey E. Kelly, Halcott Center, N. Y.

WANTS AND EXCHANGE

WANTED—From 5 to 25 hives of bees. John M. Saums, Three Bridges, N. J.

WANTED—Two-frame reversible honey-extractor. Leslie Jennings, Valois, N. Y.

ROYAL typewriter. $65.00. Will trade for honey, queens or offer. E. A. Harris, Albany, Ala.

WANTED—300 used P fences 4¼x4¼, free of disease. Willis N. Zeitler, Philipsburg, Penn.

WANTED—A bee inspector for Fremont County for the season of 1922. Address communications to W. E. Chadwick, Lander, Wyo.

WANTED—To buy 125 colonies of bees in standard hives. State lowest cash prices in first letter. F. L. Stearns, N. Bennington, Vt.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa, Council Bluffs, Iowa.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

WANTED—Bees. State amount you have, condition of bees, hives, kind, prices, etc. All in first letter. Dr. Winnemann's Apiaries Merrill, Wis.

WANTED—200 or less colonies of bees, any style hive, for spring delivery. When quoting price please remember 6c to 8c honey is in sight for next crop. Address A. W. Smith, Birmingham, Mich.

WANTED—Partner with some cash, or manager for an established bee business of about 1200 colonies in three apiaries, well located, convenient and healthy. Reference exchanged. W. B. Gehrels, Puntarenas, Box 27, Costa Rica.

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1922 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Son, Hamilton, Illinois.

FOR SALE OR EXCHANGE—Pure Buff Orpingtons or Barred Rocks. One Root eight-frame reversible automatic extractor, International engine, Barnes combination saw. All used two seasons. About 150 hives and supers and frames of drawn combs, quantity of foundation, etc. Dixon, Keewatin, Ont., Can.

REAL ESTATE.

40 ACRES of nice level land in central Wisconsin, $1200. Will take healthy Italian bees as part payment. T. H. Hansen, 13 No. Franklin St., Janesville, Wis.

FOR SALE OR TRADE—210 acres 5½ miles east of Macon, Miss., in the black belt. An excellent location for bees and Hubam clover. S. A. Chapman, Macon, Miss.

SEEDS AND PLANTS.

"We will not guarantee the purity of any seed advertised nor any nursery stock, as nurserymen ordinarily will not do this themselves; but any seedman or nurseryman advertising in our columns will have given us excellent references in advance, and our readers may consider this fact in their favor."—From Our Guarantee and Advertising Conditions.

HUBAM—100 lbs. prepaid for $50.00. See our ad on page 263. Blair Bros., R. D. 4, Ames, Iowa.

SORGHUM POP, Burbanks new popcorn, pkg. 15c, 4-oz. pkg. 25c, postpaid. Emil A. Lund, Vining, Minn.

FOR SALE—Annual White Sweet Clover Seed. Quality the best and prices low. See large ad elsewhere in Gleanings. M. C. Berry & Co., Montgomery, Ala., Box 697.

BEES AND QUEENS.

SEE Thagard's ad elsewhere back to pre-war day prices.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing Mich.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

WHEN it's GOLDEN, it's PHELPS. C. W. Phelps & Son, Binghamton, N. Y.

1922 GOLDEN queens, $1.75 each in May; $1.50 in June. E. E. Lawrence, Doniphan, Mo.

PINARD'S quality brand queens are the convincing kind. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR package bees and Italian queens, write Jones & Stevenson, Akers, La. Safe arrival and satisfaction guaranteed.

FOR SALE—Carload bees, nuclei, pound packages, full colonies. See our ad elsewhere. The Stover Apiaries, Mayhew, Miss.

PHELPS GOLDEN QUEENS will please you. Mated, $2.00; 6, $10.00; or $18.00 a doz. C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE—75 colonies bees in 10-frame Langstroth hives, now packed with abundant stores. W. C. Ridings, Lawrenceburg, Ind.

FOR SALE—Three swarms of bees, standard hives with supers and supplies—cheap. Davis, 419 Third Ave., Haddon Heights, N. Y.

BUSINESS-FIRST queens offer you their illuminated descriptive handbook with prices, select untested, $1.50. M. F. Perry, Bradentown, Fla.

QUEENS, day-old and untested. Bees, 2-lb. packages. Thompson safety cages. Resistant Italians. Circular ready. James McKee, Riverside, Calif.

FOR SALE—Package bees and Italian queens. We have been shipping packages and queens for years. Try us! Allenville Apiaries, Allenville, Ala.

FOR SALE—Early package bees, nuclei and queens. We handle 1800 colonies. Shipping season March 1 to June 1. Loveitt Honey Co., Phoenix, Ariz.

PACKAGE bees and nuclei. Booking orders 1922 delivery. See ad elsewhere or write. Canadian orders not solicited. M. L. Nisbet & Bro., Bainbridge, Ga.

PACKAGE BEES—$1.50 per pound. Untested Italian or Carniolan queens, $1.25 each. See larger adv. Circular free. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

FOR SALE—Bright Italian queens, 1, $1.25; 12, $12.00. Write for prices of nuclei and pound packages. Safe arrival guaranteed. T. J. Talley, Greenville, R. D. No. 3, Ala.

WE ARE booking orders now for spring delivery for the famous "Colorado Queens." Send your order early so as to be sure to get your queens. C. I. Goodridge, Wheatridge, Colo.

FOR SALE—100 colonies of certified Italian bees 8 L. shipping hives. Hives to be returned at my expense. Under state supervision 23 years. Charles Stewart, Johnstown, N. Y.

FOR SALE—15 colonies of Italian bees of 10 frames, wired and combs built from full sheets of foundation. $10.00 per colony. H. Shaffer, 2860 Harrison Ave., Cincinnati, Ohio

MOTT'S Northern-bred Italian queens. Will have packages of bees to offer in June. Plans "How to Introduce Queens" and "Increase," 25c. E. E. Mott, Glenwood, Mich.

FOR SALE—Three-band Italian queens, select untested $1.00 each; $12.00 per doz. 2-lb. package with queen, $5.00. Satisfaction guaranteed. W. T. Perdue & Sons, Fort Deposit, Ala.

BEES BY THE POUND — Also QUEENS. Booking orders now. FREE circulars giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas, E. B. Ault Prop.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, $1.00 each; $10.00 per dozen; $75 per 100. Pure mating safe arrival and satisfaction guaranteed.

WARNER'S QUALITY QUEENS—Write for illustrated catalog. Elton Warner, R. D. No. 1, Asheville, N. C.

FOR SALE—25 strong colonies of clean bees, $15.00 each, also entire equipment. S. K. Blundin, Oxford Valley, Pa.

QUEENS—One untested queen, $1.50; 6, $7.50; 12, $14.00; 50, $55.00; 100, $100. Tested queens, $2.50. Wells D. Rose, Sunnyside, Wash.

TRY Pinard. He's the one that breeds for quality. Root's strain. Attractive prices. See larger ad. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR SALE—An apiary at its value. See ad in February. Nuclei after April 20. Strong 4-frame at $4.00 to $5.50. B. F. Averill, Howardsville, Va.

FOR SALE—50 colonies of bees at reasonable price, good condition. No disease. Good honey producers. Owner unable to care for them. Duane Shaw, Palestine, Ill.

BOOKED to capacity on early May orders. Heavy discounts on introduced laying-en route-to-you queens with frames, and pounds after May 25. Jes Dalton, Bordelonville, La.

FOR SALE—Three-banded Italian queens, one untested, $1.25; 12, $12.00; tested, $1.75; 12, $18.00; 2-frame nuclei with untested queen, $4.50. Jul Buegeler, New Ulm, Texas.

FOR bees, queens nuclei, packages, see larger ad this issue. Annual Hubam sweet clover seed, guaranteed and scarified, delivered for $1.00 per pound. Curd Walker, Scotts Sta., Ala.

DO IT NOW—Send for descriptive booklet, prices and testimonials of my improved strain of Italian queens. Pure mating and safe arrival guaranteed. Write J. B. Hollopeter, Rockton, Pa.

FOR SALE—A few good strong colonies of Italian bees in May, in 10-frame hive-bodies. All queens clipped and one year old in August. A. W. Lindsay, 438 Mt. Vernon Ave., Detroit, Mich.

FOR SALE—Golden Italian queens ready May 1. 1 queen, $1.25; 6, $6.50; 12, $12.00; 100, $85.00. Virgins, 50c each. Write for prices of nuclei. W. W. Talley, Greenville, R. D. No. 4, Ala.

FOR SALE—Three-banded Italian queens, 1, $1.00; 6, $5.00; 12, $9.00; 100, $70.00, after May 20. We ship only the best. Safe arrival and satisfaction guaranteed. W. C. Smith & Co., Calhoun, Ala.

FOR SALE—Golden Italian queens, untested about May 1, $1.15; 6 for $6.50; 12 or more $1.00 each; tested $2.00; select tested, $3.00. No disease. No bees for sale. D. T. Gaster, Randleman, R. D. No. 2, N. C.

FOR SALE—2-pound packages, 3-banded Italian bees, with queens, $4.75 each; 10 or more, $4.50 each; 25 or more, $4.25 each. No disease, safe arrival and perfect satisfaction guaranteed. J. J. Scott, Crowville, La.

FOR SALE—50 hives of bees in 2-story 10-frame hives; zinc queen-excluders, escape-boards, Miller feeders, comb-honey supers, extra combs wired. Other tools and fixtures for bees. E. D. Howell, New Hampton, N. Y.

FOR SALE—Our well-known strain of pure Italian bees and queens. They are great honey gatherers and wonderful disease-resisters. Send for free circular and price list. M. C. Berry & Co., Montgomery, Ala., Box 697.

FOR SALE—Italian bees, free from disease, in nine or ten Hoffman frame hives, delivered on board the cars at Dayton, Pa., in good order. Good colonies, $15.00 cash with order. Inquire of Jacob Long, Sr., Dayton, R. D. No. 1, Pa.

FOR SALE—Unsurpassed Italian queens, ready June 1. Untested, 1, $1.25; 6, 7.00; 12, $12.00; 50, $50.00; 100, $85.00. Tested, 1, $2.00; 6, $11.00. My queens are actually laying before they are sent out. J. D. Harrah, Freewater, Oregon.

WRITE us number of packages or nuclei you may be in need of. We will be glad to give you our best prices, also amount of express. We believe we are so located that we can make you a substantial saving. R. V. Stearns, Brady, Texas.

FOR SALE—12 colonies, leather-colored Italians, with young tested queens, in ten-frame Langstroth hives. No disease in this part of the country. Ready to ship May 1. Price $12 each, or $140 for lot. Van Collins, R. F. D. Port Chester, N. Y.

ORDERS booked now for spring delivery, 3-frame nucleus and queen, $6.50; select tested, $7.50; Dr. Miller's strain. No pound packages. Low express rates and quick transit north. 10% with order. S. G. Crocker, Jr., Roland Park, Baltimore, Md.

BEES BY THE POUND—I am prepared to furnish for April or May deliveries Italian bees in one, two or three pound packages. Shipped in Root-Pritchard or Root combless shipping cages. Correspondence solicited. G. O. Pharr, New Iberia, La.

BRIGHT ITALIAN QUEENS, $1.00 each, 10% less in dozen lots. Pure mating, safe arrival and reasonable satisfaction guaranteed in U. S. and Canada. Write us for prices on package bees. We have them in season. Graydon Bros., Rt. 4, Greenville, Ala.

WILLOW-DELL queens and bees have pleased. Will again be ready to handle your orders. May delivery with queen, two-frame nuclei, $4.00; three-frame, $5.25; Jumbo, $4.75 and $6.00. Shipping boxes returned collect. H. S. Ostrander, Mellenville, N. Y.

EXPRESS is lower on northern bees. Prices no higher. 2 lbs. Italian bees with queen on comb of stores in May, $5.75. Comb of stores insures success. Prompt delivery and safe arrival guaranteed. Card brings circular of golden and 3-banded queens. Ross B. Scott, LaGrange, Ind.

MY GOLDEN ITALIAN QUEENS possess the qualities which make beekeeping profitable. Mated, $1.00 each. $10.00 per doz. Virgins, 50c each or $4.25 per doz. Safe arrival and satisfaction guaranteed. Your orders solicited. Crenshaw County Apiary (Melvin Talley, Prop.), Rutledge, Ala.

THREE-BANDED ITALIAN QUEENS. Bred from queens whose bees have given big crops of honey. Pure mating and satisfaction guaranteed. May 15 to June 15, 1, $1.50; 6, $7.50; 12, $13.50. All orders filled in rotation. First on list will be first filled. J. D. Kroha, 87 North St., Danbury, Conn.

MERRILL'S three-band and Golden Italian queens, the disease-resisting honey-gathering strain. Large, vigorous, beautiful and gentle. High-grade stock at reduced prices, $1.00 each; 6 $5.25; 12, $10.00; 25, $18.50. Satisfaction guaranteed. G. H. Merrill, R. D. No. 5, Greenville, S. Car.

FULL COLONIES, 2-FRAME NUCLEI, PACKAGE BEES and ITALIAN QUEENS from the apiaries of E. R. King, formerly Deputy Inspector of Ohio, later in charge of Apiculture at Cornell University. Write us what you want. Prices and information will be sent you. King's Apiaries McArthur, Ohio.

FOR SALE—Comb packages, 3 lbs. bees, one good untested queen on a standard frame of honey and emerging brood, $6.50; 2 lbs. same as above, $5.00. 15% down to book order. To be shipped April 20 to June 1. Queens introduced if wanted subject to be laying en route. Guarantee safe delivery. C. A. Mayeux, Hamburg, La.

COLORADO HEADQUARTERS for QUEENS—Northern-bred leather-colored three-band Italians. Safe arrival guaranteed. Booking orders now for June 1st delivery. Send for circular and price list. Loveland Honey & Mercantile Co., Loveland, Colo.

MY 1922 queens and bees for sale, the big yellow kind, none better. Satisfaction guaranteed or money back. Price, untested, $1.00 each; $10.00 per doz., or $80.00 per 100. Tested, $1.75, E. F. Day, Honoraville, Ala.

THREE pounds of bees, shipped on a Hoffman frame of brood and honey, with an untested Italian queen for $6.00. No disease, satisfaction and safe arrival guaranteed. 25% books your order for April and May shipments. E. J. Beridon, Jr., Mansura, La.

FOR SALE—Three-banded leather-colored bees and queens—big cut in prices. No disease. Safe arrival and satisfaction guaranteed. Shipping season April 15 to May 25. Send for circular and prices on quantities. J. M. Cutts & Son, R. D. No. 1, Montgomery, Ala.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Our aim is not quantity but quality. Our first consideration is to give perfect satisfaction. Untested, $1.50 each; 6 for $8.00; tested, $2.00 each; select tested, $3.00 each. Prof. W. A. Matheny, Ohio University, Athens, Ohio.

FOR SALE—Golden Italian queens and bees, untested, 1 queen $1.00; 1 doz., $10.00; 100, $75.00. 2-lb. package, with queen, $5.00; 1-lb. package with queen, $3.00; 12 or more, 5% off. 2-frame nucleus with queen, $5.00; 15 or more, 5% off. Safe arrival and satisfaction guaranteed. J. F. Rogers, Greenville, R. D. No. 3, Ala.

I EXPECT to be ready to start shipping 3-lb. packages of bees with 1 frame, 1 untested queen at $6.00; 2-frame nuclei with untested queen, $4.50, about April 15. Young tested queen, 50c extra, or $1.50 each. I think I was the second to ship packages of bees from this state and know how to serve customers. F. M. Morgan, Hamburg, La.

FOR SALE—Package bees for spring delivery, three-banded strain, bred for business, 20% cash books your order. Safe arrival and satisfaction guaranteed. A two-pound package of bees, and select untested queen for $5.00; 25 or more for $4.75 each. Write for prices on larger lots. Caney Valley Apiaries, J. D. Yancey, Mgr., Bay City, Texas.

FOR SALE—200 colonies of the celebrated Moore strain of leather-colored Italians. They are in Langstroth hives, combs all built on wired foundation. All have tested queens less than one year old. No disease among or near them. Price in lots of one to 50, $12.00 each; 50 to 100, $11.50 each; 100 or more, $11.00 per colony. Elmer Hutchinson & Son, Lake City, Mich.

LARGE, HARDY, PROLIFIC QUEENS—Three-band Italians and Goldens. Pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. After June 1 prices as follows: Untested, $1.25 each; 6 for $7.00; select untested, $1.50 each; 6 for $8.50; select tested, $3.00 each. Special prices on larger quantities. Queens clipped free on request. Health certificate with each shipment. Buckeye Queens, Zoarville, Ohio.

GOOD queens advertise themselves. It takes expensive advertising to sell poor queens, and if you don't believe it try it. We believed in former years we had the best three-banded queens obtainable. We still believe it. Our customers also tell us the same. Try a few. We have dropped the price in reach of all this year. We will have a few virgins for 50c when we have a surplus of them. We can furnish either from imported or Americanized mothers. Untested, $1.00; selected, $1.25; tested, $2.00; selected, $2.50. F. M. Russell, Roxbury, Ohio.

TRY ACHORD'S BEES and QUEENS. Price list by return mail. W. D. Achord, Fitzpatrick, Ala.

FOR SALE—Italian queens nuclei and packages. B. F. Kindig, E. Lansing, Mich.

FOR SALE—Hardy Italian queens. Prices on request. The Brookside Apiaries, Bennington, Neb.

BOOKING orders now for early queens and package bees. Write for prices. Sarasota Bee Co., Sarasota, Fla.

FOR SALE—20 colonies Italian bees in standard 10-frame hives. Also Cowan extractor; 30 supers. Bargain. A. L. Rumsey, 105 Catherine St., Ithaca, N. Y.

FOR SALE—1 to 25 colonies of Italian bees in 10-frame hives, each $10.00; 35 10-frame L. extracting supers, each $1.50; 18 10-frame Danz. comb-honey supers, each 75c; one 2-frame Novice extractor, $12.00; 30 cases, two each, second-hand 60-lb. cans, each 40c. Have no disease. C. Kubick 7032 Alcott Ave., Edison Park, Chicago, Ill. Telephone, Newcastle 1531.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you want. They are GREAT HONEY-GATHERERS, BEAUTIFUL and GENTLE. Virgins, $1.00; mated, $2.00; 6 for $10.00, or $18.00 per doz.; tested, $5.00. Breeders, $10.00 to $20. Safe arrival guaranteed only in the U. S. and Canada. C. W. Phelps & Son, Binghamton, N. Y.

LARGE leather-colored three-banded Italian queens. 10-year selection, bred for honey-gathering, gentle, hardy and long life. Price, select untested, 1, $1.25; 6, $6.50; 12, $12. After July 1, $1.00; 6, $5.00. Tested, $1.50 each. Write for price on large orders. Free booklet, "How to Transfer, Get Honey and Increase." J. M. Gingerich, Kalona, Iowa.

PACKAGE BEES—With untested 3-banded Italian queen, 21 years of experience enables me to breed queens that get results. 2-lb. package, $4.25; 3-lb. package, $5.50. Deduct 50c each for hybrid bees. No disease in county. Bees shipped by express in May. 25% with order and balance before shipment. Safe arrival guaranteed. Bruce Anderson, Bath, N. C.

FOR MAY DELIVERY—One vigorous Italian queen, one frame emerging brood, one pound bees, price complete, $5.00. Additional pound bees, $1.00. Additional frame of brood, $1.00. Banat mixed queens and bees 5% discount. After May 25 10% discount on all. Safe arrival guaranteed. Send 10% to book order. T. W. Livingston, Norman Park, Ga.

BURLESON ITALIAN BEES AND QUEENS—In 2 and 3 lb. packages; 1 2-lb. package with select untested queen, $5.00; 25 or more, $4.50; 1 3-lb. package with select untested Italian queen $6.25; 25 or more, $5.75. Ten per cent with order, balance 10 days before shipment; 1000 colonies to draw from. Can deliver the goods on time. Safe arrival and satisfaction guaranteed. T. W. Burleson, Waxahachie, Texas.

CONNECTICUT queens. Highest grade 3-banded Italians ready June 1. Select untested $1.25 each; 6, $6.50; 12, $12.00; 50 $47.50; 100, $90. Two lbs. bees with queen, $5.00; 3 lbs. with queen, $7.00. Two-frame nuclei with queen, $5.50; 3-frame with queen, $7.50. Select virgin queens (not culls), 50c each, $45.00 per 100. No disease and satisfaction guaranteed. A. E. Crandall, Berlin, Conn.

MAY delivery, one, two and three pound packages, $3.00, $4.00 and $5.00. Nuclei, $3.00, $4.25 and $5.50, with select untested Italian queens. Special orders solicited. Select untested three-band queens, April and May, $1.25, 6 or more $1.00 each. 20% books order. State health certificate. Safe arrival and satisfaction guaranteed. Address Apalachicola, Fla., office. Tupelo Honey Co., Columbia, Ala.

LAST fall I had selected and tested six queens. Will use them as breeders this season in my queen yard. Their surplus honey capacity is from 216 lbs. to 288 lbs. each. I guarantee that every queen bought of me in 1922 is to be the daughter of one of these queens. Bees are three-banded. Mated. in June, $1.25 each; 6, $7.00; 12, $13.50; 25 or more, $1.00 each. After July 1, $1.00 each straight. Julius Victor, Martinsville, N. Y.

FOR SALE—100% queens bred from extra-select Jay Smith breeder. Larger queens from my cell builders reinforced with hatching brood and mated in standard frame nuclei. I guarantee safe arrival and entire satisfaction and that every queen lays before being caged. Also package bees. I am after a name and reputation. Give me a trial. Select untested, 1 $1.25; 6, $7.00; 12, $13.00; 25 to 100, $1.00 each. H. Peterman, R. F. D., Lathrop, Calif.

BEES—2-lb. packages, $3.50; 6 or more, $3.45; 12 or more, $3.40; 25 or more, $3.25; young Italian queens, $1.25 extra. Shipments April 10 to May 1, by express f. o. b. New Orleans. Hardy three-banded and leather-colored stock, free from disease, shipped in Root cages on frame of foundation, safe arrival and satisfaction guaranteed or money refunded, 25% deposit to book your order. Order early and state date you prefer shipment. Reference A. I. Root Co., New Orleans, La. R. S. Knight, 4927 Conti St., New Orleans, La.

THAT PRITCHARD QUEENS AND PRITCHARD SERVICE made a hit last season is proven by the many letters of appreciation and repeated orders received. This year we are BETTER PREPARED WITH a LARGER OUTFIT AND REDUCED PRICE. Three-banded Italians, untested, $1.25 each, 6 for $7.00; select untested, $1.50 each, 6 for $8.50; select tested, $3.00 each. Queens clipped free on request. We are booking orders now. Send yours at once and we will do our best to ship on date you desire. Acknowledgement and directions for introducing sent on receipt of order. Safe arrival and satisfaction guaranteed. Untested ready about June 1. Arlie Pritchard, R. D. No. 3, Medina, Ohio.

LATHAM'S queens are well-bred Italians. She-Suits-Me Queens will please you. Get in your order early. The discount of 20% will continue till May 1, and will then be positively removed for the season. Prices for untested queens from May 15 to June 15, $2.00 each, 10 or more, $1.75 each. After June 15, $1.50 each for 1 to 9; $1.30 each for 10 to 24; $1.25 each for 25 to 49; $1.20 each for 50 to 99; $115 for 100 queens. See full page advertisement on inner back cover of January Gleanings. That discount makes my prices low. I offer the discount so that I can know in advance the number of queens that I am to have ready each month. When a queen-breeder knows in advance, he can afford to give better prices, since that knowledge permits him to produce his queens at less cost. Allen Latham, Norwichtown, Conn.

QUEENS AND PACKAGE BEES—March 1 finds us ready for shipping. Let us book you for short notice shipping. Bees and queens for your unpacking time. We have just added 1200 colonies of bees to our business in Mesa, Ariz., with our Mr. Jas. Lisonbee where weather and spring conditions are ideal for March and April package bees. All queens will be shipped from our large queen yards at Sandia, Texas, where we breed our pedigreed strain of three-band leather-colored queens from tested honey-producing mothers, and 8 miles out we breed our special golden queens that produce bees solid yellow to the tip. Very gentle, prolific and good honey-getters. 1 untested queen, $1.50; 25 or more, $1.25 each; 1 select untested queen, $1.70; 25 or more, $1.40 each; 1 select tested queen, $3.00; tested breeder, $5.00. 1-lb. package bees, $2.25; 25 or more, $2.15; 1 2-lb. package bees, $3.75; 50 to 100, $2.60 each. Larger size quoted on request, also parcel post packages. Safe arrival guaranteed. Send all orders to Dr. White Bee Company, Sandia, Texas.

BY RETURN MAIL—Tested queens, $2.50 each, reared last fall from our well-known strain of three-banded Italians. None better. Untested queens ready to mail April 15, $1.50; $13.50 per dozen. Safe arrival and satisfaction guaranteed. Also no disease ever in this locality. J. W. K. Shaw & Co., Loreauville, La., Iberia Parish.

FOR SALE—Two-frame nuclei Italian bees, with tested Italian queen, delivery May 1 by express f. o. b. here, $7.50 each. Terms, $2.00 down, balance ten days before shipping date. These queens were reared last August from very choice Italian stock, and big producers. Order early as we have set a limit on number of nuclei we will sell this season. First come, first served. Largest apiary in Westchester County. Spahn Bros., Pleasantville, Westchester Co., N. Y.

QUEENS—Bright, three-banded Italian. We are now booking orders for the season of 1922. Shipments of queens this year commenced on March 15. All queens mated in standard full-sized nuclei. We operate four thousand standard full-sized nuclei. Capacity and output this season five thousand queens per month. We own, operate and run for extracted honey in the states of California and Nevada twelve thousand colonies of bees. All of our breeders are selected queens whose colonies led these twelve thousand colonies of bees last season. Better selection of breeders cannot be equaled or had anywhere. We have the capacity and output of queens to make shipments promptly as and when promised. We guarantee safe arrival of queens. Prices——Mated. untested queens, 1, $1.00; 6, $5.50; 12, $9.60. In larger quantity 75c each. In quantity of 100 or more write for special price. Terms 10 per cent deposit on booking order—balance at time of shipment. See our large advertisement in this magazine. Western Bee Farms Corporation (Principal); Western Honey Corporation and Western Citrus Honey Corporation (Associated Corporations). Claus Spreckels Building, No. 703 Market Street, San Francisco, California.

PACKAGE BEES—While publishing the Beekeepers' Review I sold thousands of packages of bees for others and I do not think I ever offered a better bargain on bees than I can offer on 200 4-lb. packages from Georgia. They are really a one-frame nucleus containing 4 lbs. of bees, the comb containing the feed for the bees while in transit. There is really no loss in shipping bees this way, as I know from long experience in shipping hundreds of packages. The queens are tested three-banded stock less than a year old, except a few mismated ones which will be replaced by young ones reared this spring. There has never been disease in this location. Safe delivery by express guaranteed. Delivery to be made between April 20 and May 10. The regular price of package bees seems to be $2.00 per pound and tested queens, $2.00 each, which would make one package at market price cost $10.00. I quote 10 4-lb. packages of bees with tested queens at $60.00; 50 packages at $287.50; 100 packages, $550.00. Large purchasers had better wire in their order as they will not last long at this low price. Write or wire me here at my winter home. Address E. D. Townsend, Marksville, La.

HELP WANTED.

WANTED—Man to help with 150 colonies of bees, poultry and gardening at Madison, N. J. Give experience. L. W. Smith, 56 Williams St., New York City.

WANTED—Young man with general experience for the coming bee season. State qualifications in first letter. Room and board furnished. B. B. Coggshall Groton, R. D. No. 12, N. Y.

WANTED—A man to work in our apiaries. Must have some experience. Send reference, etc., in first letter. J. B. and Chas. Merwin, Prattsville, N. Y.

WANTED—Energetic young man to work in our queen yards. Must have good eyesight and be willing to hustle. In applying give full details and name salary demanded in first letter. M. C. Berry & Co., Montgomery, Box 697, Ala.

WANTED—Four men for the coming season experienced in comb-honey production, to work in our apiaries in Montana. Give references, experience and wages expected in first letter. Steady work for right man. Weber Bros. Honey Co., Blackfoot, Idaho.

WANTED—By a large and financially responsible corporation, operating at several different points in the states of California and Nevada, several experienced bee men and several helpers. Good wages (board and room) and permanent position, twelve months a year if work is satisfactory. Financial references furnished if desired. Give age, experience, and full particulars in first letter. Apply Western Bee Farms Corporation, 703 Market St., San Francisco, Calif.

SITUATIONS WANTED

POSITION WANTED—With progressive beekeeper to learn the business. Ohio or Michigan preferred. C. A. Henry, Medina, Ohio.

WANTED—A position with some good man or widow woman to oversee or take charge of bees. Have had large experience. Raised on farm. J. W. Newton, 1235 Abbott St., Detroit, Mich.

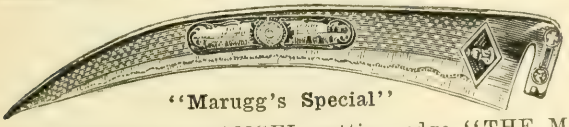
MISCELLANEOUS.

FOR SALE—A 6-inch telescope, surveyor's compass, little used, very accurate. O. Bromfield, South Jacksonville, Box 312, Rt. 8, Fla.

TYPEWRITERS—All makes slightly used; $20 up. Easy payments. Free trial. Express prepaid. Guaranteed two years. Payne Company, Rosedale, Kansas.

FOR SALE—Pure young Nubian buck. also 25 half and three-quarter young Nubian does and doe kids from good milking mothers. R. M. Collins, 220 No. 4th St., Muskogee, Okla.

MEDICINAL roots and herbs are very profitable to grow. We especially recommend growing Golden Seal, which with good care will yield as high as $10,000 per acre for each crop. It takes several years to mature but will average $1000 a year. Special Crops, a monthly paper, tells how. Sample copy, 10c, $1.00 per year. Address Special Crops Pub. Co., Box "G," Skaneateles, N. Y.



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And Sickles with DANGEL cutting edge "THE MARUGG SPECIAL" are praised by thousands of users in the United States. Used by leading apiarists. Write for particulars to THE MARUGG COMPANY, Dept. B, TRACY CITY, TENN.

Newman's Queens

ORIGINATED FROM THE WORLD-FAMOUS MOORE STRAIN OF ITALIANS. ABSOLUTELY FIRST QUALITY AND FULLY GUARANTEED. NO DISEASE. SATISFACTION AND SAFE ARRIVAL.

Untested $1.25; 6, $7.00; 12, $13.50.
Select Untested, $1.75; 6, $9.00; 12, $17.00.

Circular free.

A. H. NEWMAN, QUEEN-BREEDER.
MORGAN, KY.

WRITE US

number of packages or nuclei you may be in need of. We will be glad to give you our best prices, also amount of express. We believe we are so located that we can make you a substantial saving.

R. V. STEARNS
BRADY, TEXAS

QUEENS

OUR OLD RELIABLE THREE-BANDED ITALIANS ARE HONEY GETTERS.

They are gentle, prolific, and very resistant to foul brood. Orders booked for one-fourth cash. Safe arrival guaranteed. Circular free.

PRICES APRIL 1st TO JULY 1st.

Untested	$1.25;	over 25, $1.00 each
Sel. Unt.	1.50;	over 25, 1.25 each
Tested	2.50;	over 25, 2.25 each
Selected Tested		3.00 each

See our Dec. and Jan. Advertisement.

JOHN G. MILLER
723 C Street, Corpus Christi, Texas.

Ready now, 3-banded Italian queens, the famous Dr. Miller and my own stock. Prices: Untested, $1.25 each, 6 for $7.00, 12 for $13. Selects, 25c each higher; clipping free. Tested, $2.00 each, 6 for $11, 12 for $20. Write for prices on larger lots. 3-frame nucleus with untested queen, $5.50; without queen, $4.25. Bees, one pound $2.00; two pounds, $3.75; three pounds, $5.25. (Add price of queens to same.)

As I have just got located in my new location I am not booked very heavy with orders; so, if you want bees and queens from the south early, give me a list of what you want booked, and date of shipment. A square deal to all my customers, new as well as old. 20 years' experience with the bees. 10 years rearing and shipping bees; give me a chance. I will surely try to treat you squarely.

CURD WALKER,
(Formerly of Jellico, Tenn.) Scotts Station, Ala.

INDIANOLA APIARY

is now booking orders for 1922 for Italian bees and queens. Write for price list and circular. No disease. Bees inspected by State inspector.

J. W. SHERMAN
Valdosta, Ga.

ROOT QUALITY BEES AND BEEKEEPERS' SUPPLIES.

Bees in the hive, in packages, and nuclei, three-banded leather-colored Italian queens. Let a beekeeper of long standing serve you in your requirements for 1922. Catalog on request.

O. G. RAWSON,
3208 Forest Place, East St. Louis, Illinois.

Queens of Quality

—from—

Tennessee

3-band Italians only.

Untested, $1.25 each; six for $7.00; $12.00 per dozen. Ready about May 10th. Circular free.

J. I. BANKS, DOWELLTOWN, TENN.

NO CASH WITH ORDER

Progress Trees and Shrubs are so trustworthy that you pay after you get them. Quality that counts and a service that helps. Write for catalog without delay.

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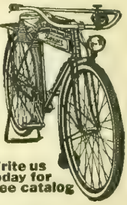
12 Months to Pay



You can easily earn money for the small payments. Parents often advance first payment to help buy a **RANGER. 44 styles,** colors and sizes. **Factory to Rider** prices. **Delivered FREE,** express prepaid, for **30 DAYS' TRIAL.** Terms to suit—cash or easy payments.

Tires lamps, wheels, horns, repairs and equipment at half usual prices. **SEND NO MONEY.** Write today for our big, Free Ranger Catalog and marvelous prices.

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The most practical book on strawberry growing ever published. 68 pages of money-making information and art---34 pages in natural color. Written by America's most successful strawberry grower. Tells how he makes poor soil rich without manure or fertilizer. Gives his secrets for growing the big crops of fancy strawberries that won him fame and fortune. Send for this book right now and learn the KELLOGG WAY. A postal will do. It's FREE.

R. M. KELLOGG CO.
Box 332 Three Rivers, Mich.

HUBAM CLOVER

Grown in Wisconsin

Seed planted on April 23, blossomed June 28, in blossom up until Sept. 15. When it was cut for seed and the stubs shot out a second growth, it blossomed until heavy frost. Seed for sale at $1.75 a pound to beekeepers. Germination and purity guaranteed. Above price is for single pounds. Bushel lots at special prices upon application.

OAK WOODS FARM
W. P. BRENNER, Prop.
Green Bay, Wisconsin

HUBAM

50 CENTS A POUND

We have a few hundred pounds of Hubam Clover seed left and are offering it at 50c a pound f. o. b. Ames, for orders of ten pounds or more; 75c a pound for smaller amounts, prepaid.

This is Genuine Hubam of good quality, and has been hulled and scarified at the Iowa State College, here at Ames.

Several leading beemen have said it would pay beekeepers to give seed away to get it started in their neighborhood. Better order 100 pounds and be sure of a big crop of honey next summer.

On orders of 100 pounds or more we will pay the express.

BLAIR BROTHERS
Route 4. AMES, IOWA

HUBAM CLOVER The Honeybees' Friend

Beekeepers are greatly interested in Hubam Clover because it produces the largest crop of splendid honey food. We have a select lot of certified hardy Hubam Clover seed. 25c an oz.; $2.50 a lb.; when orders are placed for ten lbs. or more, $2.00 per lb. Order early. Supply limited.

KEITH BROS. NURSERY, Box 716, Sawyer, Mich.

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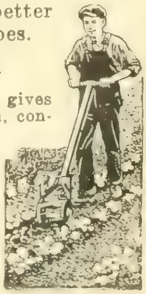
WEEDER, MULCHER AND CULTIVATOR

Don't do garden work the slow, back breaking way. The BARKER makes the finest gardens possible—quickly, easily. Simply push along rows (like lawn mower)—8 blades revolving against underground knife destroy the weeds and in same operation break the crust into a level, porous, moisture-retaining mulch. Aerate soil. "Best Weed Killer ever used." Has leaf guards, also shovels for deeper cultivation. A boy can run it—do more and better work than 10 men with hoes.



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Zanesville, Ohio—"Beedom's Capital."

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PROMPT AND EFFICIENT SERVICE

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It is a business with us—not a side line.
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HUBAM 200 **Bushels Distributed FREE YOUR Opportunity.**

Grow this wonderful clover. Plant field at our expense. Seed produced where plant originated, under direct supervision of H. D. Hughes. **20c** for large packet of seed, full information regarding our offer, and the book "Hubam Clover, What, Where, Why?" Wonderful reports from growers in your section and other information sent FREE. Lowest prices. Transportation paid. None better. **Alabama Hubam Clover Ass'n, Inc., Box 625, Newbern, Ala.**

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A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. **Agents wanted. Big Profits. Write for Catalog.** **THE BEST LIGHT CO.**
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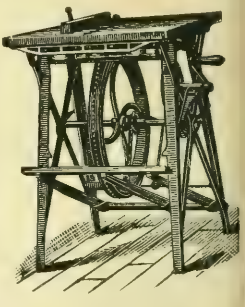
BARNES' HAND & FOOT POWER MACHINERY



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Send for illustrated catalog and prices.

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Three-banded Italians for May Shipments.

	1	12	100
Untested Queens	$1.00	$11.00	$ 75.00
Select Untested	1.25	13.00	100.00
Tested Queens	1.35	15.00	125.00
Breeders			$5.00 each

Safe arrival and satisfaction guaranteed.
H. L. MURRY, SOSO, MISS.

Big Fence Sale

If you need fence let us send you our 100 page Catalog. **PRICES 'WAY DOWN** on Farm, Poultry and Yard Fence Posts and Gates. We've saved thousands of farmers from **$10 to $50 each.** We can help you. Write today. IT'S FREE.

KITSELMAN BROS. Box 21 Muncie, Ind.

450,000 TREES

200 varieties. Also **Grapes, Small Fruits, etc.** Best rooted stock. Genuine. Cheap. 2 sample currants mailed for 20c. Descriptive price list free. **LEWIS ROESCH, Box C, Fredonia, N.Y.**

QUEENS NUCLEI AND PACKAGE BEES

Three-Band Italians Only. Select Breeding. None Better Regardless of Price

Again the busy season is with you amid the humming bees. We have been at it some time, preparing our colonies for their individual tasks, for each one has its special duty to perform and must be in the pink of condition, that there shall be no disappointments.

Seeing each hive had a sufficient number of bees or uniting any that were not up to required strength, that every one had a normal laying queen, and ample stores to carry on brood-rearing without intermission, plenty of good brood-combs in which to rear the thousands of gauze-winged workers (that soon will be scattered over this continent to help harvest the crop of treasured sweet) has kept us on the jump.

We are prepared. Now in summing up your winter losses, or if early increase be desired, perhaps you have some empty hives standing 'round that had better be earning something—you would do well to send us a list of your Bee and Queen wants. That's our line.

Terms—20% to book. Shipment to start April 15, after which date we can make shipment within 5 days after your order is received or guarantee to return same at once. Send full amount before shipment is desired. Bees by express F. O. B. here.

We guarantee: Freedom from disease, safe arrival and complete satisfaction. Ask for our free folder.

PRICES—Untested Queens, $1.10 each; over 25, $1.00 each. Select Untested, $1.35 each; over 25, $1.25 each. Tested, $2.00. Select Tested, $3.00 each. Breeders, $7.50 and $10.00 each in one-frame nucleus. NUCLEI—2-frame with young laying queen, $5.50 each; over 10, $5.00 each. 3-frame with young laying queen, $7.25 each; over 10, $6.75 each. COMBLESS PACKAGES—One lb., $2.75 each; over 10, $2.50 each. Two lbs., $4.25 each; over 10, $4.00 each. Three lbs., $6.00 each; over 10, $5.75 each. Queens extra.

JENSEN'S APIARIES, ROUTE 3, CRAWFORD, MISS.

QUEENS

A card will bring our 1922 catalog.

While gentleness and color are not lost sight of in breeding our queens, still the honey-getting quality of the bees is the most desirable feature. By selecting for prolificness and vigor, we have produced a strain that are splendid honey--getters.

Mr. W. A. Chrysler of Chatham, Ontario, one of the big fellows up there, writes: ''The queen I got from you in 1920 and a queen I raised from her, produced a little over four hundred pounds of honey each. There was not five pounds difference in them. They outdistanced any of the rest of our three hundred colonies by about 75 pounds.''

QUEEN PRICES.

Before August First		*After August First*	
1 to 4 inclusive	$2.50 each	1 to 4 inclusive	$2.00 each
5 to 9 inclusive	2.45 each	5 to 9 inclusive	1.95 each
10 or more	2.40 each	10 or more	1.90 each

Breeding Queens for the season, $10.00 each.

We still have a number of breeders that are not sold that can be delivered any time after April 1. We believe these are as good breeders as we have ever sold.

JAY SMITH, ROUTE 3, VINCENNES, IND.

BEES QUEENS FROM GEORGIA

QUEENS—Untested, $1.00. Tested, $1.50. BEES—1 pound, $2.00; 2 pounds, $4.00; 3 pounds, $6.00. NUCLEI—1-frame, $3.00; 2-frame, $4.00; 3-frame, $6.00. Discounts on quantity orders. Your satisfaction guaranteed Send us your list of supply needs.

MICHIGAN HONEY PRODUCERS EXCHANGE, Inc.
5495 Grand River Ave., Detroit, Michigan

IN OKLAHOMA

and northern Texas, we can furnish Beekeepers Root ''QUALITY'' goods at factory prices, with very quick service and low freight charges. Try us. We think you will like us.

THE STILES BEE SUPPLY CO.
STILLWATER, OKLA.

BEES—ITALIAN BEES—BEES

ull colonies with Italian queen at $15; 2 for $25. -frame nucleus with Italian queen at $6.50. 3-lb. ackage with Italian queen at $6.50. No disease. Safe arrival and satisfaction guaranteed.

VAN'S HONEY FARMS
an Wyngarden Bros., Props. Hebron, Indiana.

NEW ENGLAND

Beekeepers will find a complete line of the best supplies here. Send in your order early and be ready for the harvest. Remember this is the shipping center of New England. Write for new catalog.

H. H. JEPSON
182 Friend Street. BOSTON 14, MASS.

The "BEST" LIGHT

Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles. 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog. AGENTS WANTED EVERYWHERE.

THE BEST LIGHT CO.
306 E. 5th St., Canton, O.

850,000 GRAPE-VINES

66 varieties. Also Small Fruits, Trees, etc. Best rooted stock. Genuine. Cheap. 2 sample vines mailed for 20c. Descriptive price list free. LEWIS ROESCH, Box C, Fredonia, N. Y.

1922 ITALIAN QUEENS

Untested, $1.20 each, 12 or more, $1.00 each.
Select Untested, $1.50. Tested, $2.00.
No disease.

Package Bees Priced on Request.
D. W. HOWELL
Shellman, Ga., Box A3.

3-BANDED QUEENS.

As Good as Can Be Found in Beedom.

We know the demand of the beekeeper. He wants the VERY BEST QUEENS, with prompt, efficient service at prices that he can afford to pay. Our queens, service and prices meet these requirements. We are now booking orders for May and June deliveries. Never had any contagious or infectious diseases in our apiaries. Health certificate with each shipment.

—May and June—

Untested	$1.25;	12. $13.50;	25, $1.00 each
Select Untested	1.50;	12, 16.20;	25, 1.25 each
Select Tested	2.50;	12. 27.00;	25, 2.00 each

Pure mating, satisfaction and safe arrival guaranteed in U. S. (proper) and Canada. Get better posted on our queens by sending for our circular and complete price list. Capacity, one thousand queens a month.

HERMAN McCONNELL, ROBINSON, ILLINOIS.

Golden Queens, 1922

Untested, $1.25 each, or $12.00 per dozen; $90.00 per hundred. Tested, $2.00 each. Two-pound packages, each delivered with untested queen, $6.50; two-frame nuclei with untested queen, delivered, $6.50. Satisfaction guaranteed and shipments from April 15th.

R. O. COX, Box 25, Rutledge, Ala.

Quigley Quality

Italian Queens and Bees are produced by double grafting, producing queens of superior quality and long-lived bees, filling your big hives with bees. Hustlers, hardy, wintering on summer stands. No disease; 36 years in this location. Purity and satisfaction guaranteed.

Tested May and June	$3.00
Fine Breeders	$10.00
Untested, May and June	$ 2.00
Six for	$11.00
3-frame Nuclei, tested queen	$ 7.50

Send for circular.

E. F. QUIGLEY & SON,
Unionville, Missouri.

TALKING LAWS' QUEENS SPEAK FOR THEMSELVES QUEENS

Over thirty-five years as commercial queen-breeder and advertiser in this journal have brought orders from thousands of Gleanings readers. If there is a dissatisfied customer I do not know it. I have many testimonials that make me glad. One firm bought over 5000 queens of me, and writes that my ''queens and business methods are very satisfactory.'' Another writes, ''Your queens are all good queens. Our individual crop of honey was 105,000 pounds season 1921; Laws' queens did it.''

PRICES: Untested, each, $1.25; 12 for $12. Tested, each, $1.50; 12 for $15. Breeding queens, none better if as good, each, by mail, $5; or with a 3-frame nucleus of her own bees by express, $10. This nucleus, if ordered early, should gather honey enough to pay all costs. Write for prices quantity lots. I am prepared to furnish in large lots; also bees in three-frame nuclei. No disease; entire satisfaction. Address

W. H. LAWS, BEEVILLE, BEE COUNTY, TEXAS

Do You Want a Big Honey Crop for 1922?

Thagard's Italian Queens

BRED FOR QUALITY

Will produce workers that will gather a mammoth honey crop for you. Prompt service and perfect satisfaction guaranteed. We are back to Pre-War days prices on queens and bees. Catalog free.

UNTESTED
1 to 12, $1.00 each; 12 to 49, each, 95c;
49 to 99, 85c each; 100 or more, 80c each.

ITALIAN BEES—WITH ITALIAN QUEENS.

1-pound package	**$3.00**
2-pound package	**5.00**

If you want untested queens bred from any special breeders, the price will be:
1 to 5. $1.50 each; 5 to 12, $1.10; 12 to 50, $1.00 each.

V. R. THAGARD CO. - - GREENVILLE, ALABAMA.

Queens of Quality

from the famous Black Belt of Alabama, the section suited by nature to the production of queen bees. Three-banded Italians, bred for honey production, disease-resistance and gentleness. There is no disease in my neighborhood. Entire satisfaction guaranteed. Descriptive circular on request. Untested, $1.25; Tested, $2.00.

P. M. WILLIAMS, Ft. Deposit, Ala.

Package Bees
---AND---
Reliable Queens

GOLDEN AND THREE-BANDED ITALIANS

We are now in a position to accept orders for queens and bees for spring shipping in large quantities. We have the stock and experience necessary to handle your orders, whether large or small.

1-lb. Package with Queen	$3.00
2-lb. Package with Queen	5.00
3-lb. Package with Queen	7.00
Tested Queen 1, $2.50; six	12.00
Untested ....1, 1.25; six	7.00
Select Untest. 1, 1.50; six	8.00

We are in position to fill orders from 100 to 5000 queens or packages. Safe arrival and satisfaction guaranteed. Terms, 25% to book orders.

E. A. SIMMONS
GREENVILLE - - - - ALABAMA

THREE-BANDED

ITALIAN QUEENS

WITH PACKAGE BEES AND NUCLEI

All I have for sale are guaranteed to please. Can start your shipments as early as April 20th. Prices for nuclei and packages, furnished with vigorous Italian queens, as follows:

One 2-frame nucleus with untested queen, $5.00; in dozen lots, $4.50. One 2-frame nucleus with tested queen, $5.50; in dozen lots, $5.00. Two-lb. package hybrid bees with untested queen, $5.50; twelve, $5.00; in lots of 25 or more, $4.75.

Disease of any kind has never been recorded in our county. Health certificate and instructions accompany each package. Satisfaction is guaranteed, and you are to be the judge. 25% deposit books your order, balance due at time of shipment. I have arranged for better railway service by shipping from Clarksville.

Address all orders to

BAUGHN STONE
CLARKSVILLE, TEXAS.

Three-Banded Italian Bees & Queens

2 lbs. bees, 1 untested queen, $5.00. Special price on 2-lb. packages without queens. No diseases. Safe delivery and satisfaction guaranteed. Ask for prices on large orders. Health certificate with each shipment.

J. L. LEATH,
CORINTH, MISSISSIPPI.

Three-Banded Italian
QUEENS

Bred from queens whose bees have given big crops of honey. Pure mating and satisfaction guaranteed. May 15 to June 15: 1, $1.50; 6, $7.50; 12, $13.50. All orders filled in rotation. First on list will be first filled.

J. D. KROHA, 87 North St., Danbury, Conn.

Northwestern Headquarters for Italian Queens

The queen is the life of the colony. You cannot afford to keep poor queens or a poor strain of bees. I have been in the bee business for more than twenty years and have made every effort to improve the honey-gathering qualities of my bees by purchase of breeders and by selective breeding. I believe that my bees are unsurpassed by any. When you buy Untested Queens from me you are getting select untested queens. I will begin mailing queens about June 1.

Prices June 1 to October 1:	**1**	**6**	**12**	**50**	**100**
Untested Italian Queen	**$1.25**	**$7.00**	**$12.50**	**$50.00**	**$95.00**
Tested Italian Queen	**2.00**	**11.00**			

I have no pound packages or nuclei for sale.

J. D. HARRAH, Route 1, FREEWATER, OREGON

BURLESON'S OLD RELIABLE
Three-Banded Italian Queens

NONE BETTER—Not as cheap as some, but worth the difference. I guarantee them to be absolutely free from brood diseases.

These are My 1922 Prices—Untested, $1.25 each; $13.50 per doz; 25 or more, $1 each. Select Untested, $1.50 each; $15 per doz., 25 or more, $1.15 each. Select tested, $3 each.

Considering the high quality of my queens combined with service and relinbility justifies the above prices. **Send all orders together with remittance to**

J. W. SEAY, Mgr., MATHIS, TEXAS
T. W. BURLESON, WAXAHACHIE, TEXAS.

QUEENS
Three-Band Italians

PACKAGE BEES

QUEENS
Silver Gray Carniolans

Orders booked with 25 per cent deposit, balance just before shipping. Deliveries start April 1st. Safe arrival guaranteed of bees within 5 days of shipping point, queens anywhere in U. S. A. or Canada. Circular free.

1-pound package	$2.00 each.	10 or more $1.75 each
2-pound package	3.50 each.	10 or more 3.00 each
3-pound package	5.00 each.	10 or more 4.50 each
1 Untested queen	1.25 each.	10 or more 1.20 each
1 Select Untested queen	1.50 each.	10 or more 1.40 each
1 Tested queen	2.00 each.	10 or more 1.80 each
1 Select Tested	2.25 each.	10 or more 2.00 each

Write for prices in large lots.

Breeders, extra selected and tested for breeding $5.00 each

References by permission—First National Bank of San Jose; Security State Bank, San Jose, American Bee Journal, Hamilton, Ill.; Western Honey Bee, Los Angeles.

J. E. WING, 155 SCHIELE AVENUE, SAN JOSE, CALIFORNIA

ITALIAN BEES AND QUEENS
COMB PACKAGES AND NUCLEI FOR 1922.

Backed by years of experience in building our apiaries to a high standard by breeding from the best; we are prepared to furnish bees and queens that satisfy, and solicit your orders guaranteeing safe arrival and satisfaction. Certificate of inspection accompanies each shipment. We have found from years of experience that bees shipped on comb invariably reach their destination in very best condition.

FULL WEIGHT PACKAGES. *EXTRA-STRONG NUCLEI.*

Booking orders now for shipment May 1, 1922. Terms: 20% cash with order.

2-lb. package with young Italian queen, 1 or more, $4.75; 12 or more, $4.40; 25 or more, $4.00
3-lb. package with young Italian queen, 1 or more, 6.25; 12 or more, 5.90; 25 or more, 5.50
3-frame nuclei with young Italian queen, 1 or more, 6.50; 12 or more, 6.15; 25 or more, 5.75

References: First National Bank, Bainbridge, Ga.; Maddox Commission Co., Bainbridge, Ga.; Apalachicola State Bank, Apalachicola, Fla. Members of: Florida State Beekeepers Association, Tupelo Honey Exchange, Wewahitchka, Fla.

M. L. NISBET & BRO.

Apiaries, Ranletts Ldg., Fla. **P. O. BAINBRIDGE, GA.**

Northern-bred Queens Are Hardy Queens

We are in position to furnish you good, hardy, thrifty queens, the result of ten years' selective breeding, the best breeders from over seven hundred colonies. Each breeder has a honey record. Each year new stock has been secured, and so we have built up a strain of bees which, I believe, cannot be beaten in the Northwest. Orders will be handled promptly. On large orders secure mailing date. Fifteen per cent down, balance two weeks before shipment. Shipments begin June 1.

1 Untested Queen	$ 1.50
6 Untested Queens	7.50
12 Untested Queens	14.00
50 Untested Queens	55.00
100 Untested Queens	100.00
Tested Queens, each	2.50

WELLS D. ROSE
Sunnyside, Washington

I PAY TRANSPORTATION CHARGES ON PACKAGE BEES

THREE
BANDED

1-lb. package, including young three-banded queen $4.50

2-lb. package, including young three-banded queen $6.00

3-lb. package, including young three-banded queen $7.50

25 cents per package less for twelve or more packages. Delivered to your address via parcel post. In comparing my prices with others, take in consideration you have no express charges to pay. Parcel post shipments go through quicker.

SELECT (one grade) untested queens, $1.50; six, $8.00; twelve, $15.00. Safe arrival of bees and queens, pure mating, and satisfaction guaranteed. Let me book your order now with ten per cent cash, balance just before shipping. Shipment will be made on the day you name. I have not yet disappointed a customer. No disease.

JASPER KNIGHT
HAYNEVILLE, ALABAMA

HONEY

Beekeepers who are supplying Honey to a regular family trade, or who are located along the highways, and are supplying motorists, know that their customers want a honey of a uniform color and flavor. And unless the honey is at all times uniform in color and flavor, customers sometimes become dissatisfied. Our special blend of Fancy Honeys(liquid) is always uniform and is of a fine mild flavor, and will satisfy the most exacting trade.

Special Blend of Fancy Honey (Liquid)

10-lb. Tins, 6 per case	16c lb.
5-lb. Tins, 12 per case	17c lb.

Various Grades, Crystallized, 60-lb. Tins.

Water White Orange	15c lb.
White Sage	13c lb.
Extra Light Amber Sage	11c lb.
N. Y. State Buckwheat	10c lb.

GLASS AND TIN HONEY

CONTAINERS

2½-lb. Cans, 2 doz. reshipping cases, $1.45 per case; crates of 100......$5.00

5-lb. Pails (with handles), 1 doz. reshipping cases, $1.35 per case; crates of 100 .... 7.75

10-lb. Pails (with handles), ½ dozen reshipping cases, $1.10 case; crates of 50 .... 5.75

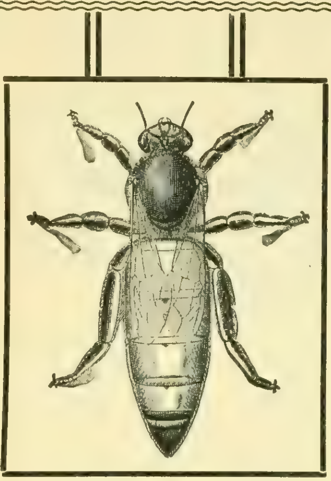
60-lb. Tins, 2 per case—NEW $1.30 case; USED .... .25

White Flint Glass, With Gold Lacquered Wax Lined Caps.

16-ounce Honey Capacity.............$1.40 per carton of 2 dozen

Quart or 3-pound Honey Capacity..............$1.00 per carton of 1 dozen

HOFFMAN & HAUCK, INC., WOODHAVEN, NEW YORK



PURE ITALIAN BEES AND QUEENS

Mr. Honey Producer:—One way to get larger yields per colony is to head each colony with a good young queen. I offer you the best queens I can produce, reared from breeders tested last fall. Drone mothers are selected with as great care as breeders.

My queens are light-colored, large and prolific, and will produce workers that will gather honey for you. Every queen sent out is reared by me, and is therefore of personal interest to me.

Record of safe deliveries last season was 98% for packages and 95% for queens (including 2% lost in packages). Packages arriving in bad order replaced to extent of damage on receipt of express bad order bill.

Queens arriving dead are replaced on receipt of dead queen which should be sent back by return mail. I guarantee pure mating so I make prices on untested queens only.

PURELY MATED UNTESTED QUEENS.

1 to 6 (selected)	$1.50 each
6 to 12	1.25 each
12 to 50	1.15 each
50 or more	1.00 each

Breeders with comb of sealed brood delivered by express, $12.00.

For pure Italian bees by the pound or nuclei see my advertisement in classified column of March issue.

20% to book order, balance about 15 days before date of shipment. Orders booked in rotation unless date specified.

J. L. ST. ROMAIN
HAMBURG, LA.

Beekeepers' Legal Rights

The American Honey Producers' League has accepted the offer of Mr. Colin P. Campbell of Grand Rapids, Michigan, to compile and make a digest of all of the court decisions affecting the bee business and the legal questions arising from beekeeping.

This work will be published by the League in booklet form and will be sold to beekeepers, who will thus have available a handy reference book in case of legal difficulty or unjust discrimination. It will cost about $500 to publish this work.

Will you help?

Donations are requested from beekeepers everywhere and from dealers in honey or bee supplies. Make checks payable to American Honey Producers' League and mail to Secretary, San Antonio, Texas.

PACKAGE BEES

All bees are shipped on a standard Root frame, emerging bees with honey.

April 15th to May 10th Shipments.

1 pound bees, with frame	$2.50
2 pounds bees, with frame	3.75
3 pounds bees, with frame	5.00

Add price of queen if wanted.

Untested three-banded	$1.50
Tested three-banded	1.75

For shipments after May 10th deduct 12 per cent.

Please order from this advertisement. 15 per cent down to book orders. Balance fifteen days before shipping.

L. C. Mayeux
BOX 15, HAMBURG, LOUISIANA.

QUEENS

Three-banded Italian Queens that must please and give entire satisfaction. We do not claim to have the best, but do claim them to be as good. No disease, and pure mating guaranteed.

—Prices to July the 1st—

Untested, $1.25; 11 to 23, $1.10 each; 24 or more, $1.00 each. Tested, $1.60 each; 12 or more, $1.50 ea.

Nuclei

Two-fr. with untested queen...$5.50
Three-fr. with untested queen.. 7.50
Ten or more, 10 per cent less.

Cypress Bee Supplies

Hives, hive-covers, bottom-boards, supers, frames, foundation, etc. All supplies will be shipped from Coker, Ala.; all bees and queens from Crawford, Miss.

The Abston Apiaries
Crawford, Miss. Coker, Ala.

Light three-banded bees and queens for April, May and June delivery. We stand for stock, promptness, safe delivery, satisfaction and no disease. We want to please our customers.

All bees are shipped on Root Standard Hoffman frame, brood and honey, which means safe delivery, and equal to a pound of bees. Queens introduced laying en route.

2 pounds bees, no queen, $3.75. Add $1.00 for each additional pound of bees or frame emerging bees.

2-fr. nuclei well covered with young bees, $3.75 ea. Add $1.00 for each additional pound of bees or frame emerging bees.

The package that brings results—5 lbs. bees on two frames emerging bees, $8.00.

Queens for the above packages, $1.25 each; 5% discount on 20 or more packages; 15% with order; balance at shipping time.

+ + +

THE HOME OF GOOD QUEENS.
Oscar Mayeux.
Hamburg, Louisiana.

¶ Mr. T. E. Spencer of Shell, Wyo., produced 249 pounds honey and increased to three colonies from 4 lbs. of Milam's bees. See Gleanings for December, 1920, pages 728-29.

* * * * * *

¶ I am once more prepared to supply a limited number of queens and 2-lb. packages of bees at following prices:

1 untested queen, $1.50; fifty or more, $1.25. 1 two-pound package, no queen, $4.25; fifty or more, $4.00. Add price of queen wanted.

* * * * * *

¶ Shipment begins first of May. 10% cash with order; balance just before shipment. Safe arrival guaranteed.

* * * * * *

¶ References—Moore National Bank, Moore, Texas; The A. I. Root Company of Texas, San Antonio, Texas.

* * * * * *

O. E. MILAM
MOORE, TEXAS.

We Furnish Colonies and Nuclei of

Italian Bees

in Hives and Shipping Boxes.

Tested Italian Queens - $2.00
Untested Italian Queens $1.50
6 Untested Ital. Queens $8.00

A full line of Apiarian Supplies always in stock. Let us quote you. Price list on request.

I. J. STRINGHAM
GLEN COVE, NASSAU
COUNTY, NEW YORK

HUMMER BEES and QUEENS ARE BLUE RIBBON WINNERS

The following unsolicited testimonial speaks for itself:

West Allis, Wisconsin, January 10, 1922.

Geo. A. Hummer & Sons, Prairie Point, Miss.

Gentlemen:—Enclosed find check for $16.25, being the initial payment on 25 3-frame nuclei and queens.

I was extremely well satisfied with the bees you sent me last year; they did very well indeed, and at the Wisconsin state fair I secured first premium on bees and queens from them.

I had an opportunity to secure nuclei very much cheaper than you offer, but when I take into consideration your excellent packing, prompt shipment, and honorable business dealings, I feel satisfied to remain your customer.

Very sincerely yours,
JOSEPH M. BARR.

We have been in the bee business in Mississippi for 30 years, and have bred up a strain of bees that are unexcelled for honey gatherers and gentleness. We make all shipments on time, as we have hundreds of strong colonies to draw from, and do not book more orders than we can fill. We are located on a trunk line railway, north and south; quick trips assured, reach Chicago in 24 hours; New York, N. Y., in 48 hours; Detroit in 42 hours; far western points in 4 to 5 days.

Prices F. O. B. Macon, Mississippi.

2-frame Nuclei and Untested Italian Queen....$5.00 each; 25 or more....$4.75 each.
3-frame Nuclei and Untested Italian Queen.... 6.50 each; 25 or more.... 6.25 each.

If tested queens are wanted, add 50 cents to above prices. Terms: 10 per cent of amount with order, balance just before shipment is made. We replace all loss on receipt of bad order receipt from your express agent, or refund money, at your option. We guarantee pure mating of queens, safe arrival, satisfaction, and prompt, efficient service.

You Will Not Be Disappointed If You Order From Us.

GEO. A. HUMMER & SONS, PRAIRIE POINT, MISSISSIPPI

Collier's Quality Queens

Breeding Queens Imported from Italy.
Three-Banded Italians Only.
Shipped When You Want Them.

Let me have your order for the 1922 season. My queens are bred by men who know how. Every order given my personal attention. All queens reared in strong two-story, ten-frame hives, under natural conditions.

Improve your weak, run-down colonies by using young, vigorous, three-banded Italian Queens from my imported stock.

You take no risk buying from Collier. If you are not satisfied I will replace or refund your money. Safe delivery guaranteed.

Untested—1, $1.50; 6, $7.50; 12, $13.50. Selected Untested—1, $1.75; 6, $9.00; 12, $16.50. Tested—1, $2.50; 6, $13.00; 12, $24.50. Selected Tested—1, $4.00; 6, $22.00; 12, $41.50.

D. E. COLLIER, RAMER, ALABAMA.

Make the WEAK STRONG

by using

Forehand's

Three-Band Italian

Bees

and

Queens

POOR QUEEN, weak colony, invitation to disease, expense not profit.

GOOD QUEEN, strong healthy colony, pride and profit to owner.

Make your weak run-down colonies good ones by using young, vigorous 3-band Italian Queens, backed by 28 years of successful breeding. With the cost of supplies plus the cost of production, can you afford colonies occupying perfectly good hives and combs, netting you nothing or a small profit? We must produce our honey at less cost, to meet the lower prices. Can you make a better start than by bringing those non-producers to the front? Give them a queen that will have the hive chock-full of young bees ready for the harvest, instead of being in a weak condition when bees are needed most. Give my imported stock a trial. You risk not a penny; if you are not satisfied, notify me and I will replace or refund your money. If the colony is too weak for a queen alone, get one or two pounds of my Italian Bees with queen. Introduce to the old colony and watch them build up. Let me make you one of my satisfied customers. I have thousands of them in U. S. and Canada.

Untested—1, $1.50; 6, $7.50; 12, $13.50. Selected Untested—1, $1.75; 6, $9.00; 12, $16.50. Tested—1, $2.50; 6, $13.00; 12, $24.50. Selected Tested—1, $4.00; 6, $22.00; 12, $41.50. One pound bees WITH QUEEN, $3.00; two pounds bees WITH QUEEN, $5.50; 10 or more 2-lb. packages WITH QUEEN, $5.00. Write for prices on large lots. Queens are ready by return mail.

N. FOREHAND, RAMER, ALABAMA.

Queens
Bright Three-Banded Italians.

Announcement
---to---

Queens
Bright Three-Banded Italians.

Beekeepers

We are now booking orders for queens for the season of 1922. Shipments of queens this year commenced on March 15, 1922.

All queens are mated in standard full-sized three-frame nuclei.

We are operating four thousand standard full-sized three-frame nuclei.

Capacity and output this season are five thousand queens per month.

We own, operate and run for extracted honey in the States of California and Nevada twelve thousand colonies of bees. All of our breeders are selected queens whose colonies led these twelve thousand colonies of bees last season. Better selection of breeders cannot be equaled or had anywhere.

We have the capacity and output of queens to make shipments promptly as and when promised.

Prices and Terms

Untested Mated Queens

1	$1.00
6	$5.50
12	$9.60

In larger quantity 75 cents each.

In quantity of 100 or more write for special price.

Terms

10 per cent deposit on booking order. Balance at time of shipment.

All queens shipped by us in six-hole mailing cages. No small-sized mailing cages used.

We guarantee safe arrival of queens. Any queens arriving dead at destination will be replaced without charge.

References by permission: The A. I. Root Co. of California, No. 52 Main St., San Francisco, California, and No. 1824 East Fifteenth Street, Los Angeles, California; The Diamond Match Company, Apiary Department, Chico, California; The Western Honey Bee, No. 121 Temple Street, Los Angeles, California; Bees and Honey, Hutchinson Building, Oakland, California; The Beekeepers Review, Lansing, Michigan. Banking references on request.

We respectfully solicit your patronage.

Western Bee Farms Corporation

(PRINCIPAL)

Western Honey Corporation --- Western Citrus Honey Corporation
(ASSOCIATED CORPORATIONS)

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DO YOU KNOW why your honey crop is sometimes a failure? The season is not always to blame. In the best seasons it takes the best queens. Are you preparing for a good season? Then you will requeen from some thrifty strain of bees.

Don't save 10c or 15c on a queen and lose your crop of honey. An inferior queen cannot meet the demands of a good season. You find this out after it is too late to save the crop.

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The Thrifty Kind

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Get a copy of our 1922 booklet, "Our Crow." and read what others say about our bees and service.

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PRICES.

	1	6
Untested	$1.50	$7.50
Select Untested	1.75	9.00
Tested	2.50	13.00
Select Tested	4.00	22.00

	12	100 Each
Untested	$13.50	$1.00
Select Untested	16.50	1.25
Tested	24.50	2.00
Select Tested	41.50	3.35

POUND BEES.

To June 30.

	1	25 or more.
1-lb. package	$2.75	$2.50
2-lb. package	4.75	4.50
3-lb. package	6.75	6.50

Add price of queen wanted.

W. J. FOREHAND & SONS
FORT DEPOSIT, ALA.

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Strong contented colonies & an abundant surplus of Honey this Fall

65¢ per lb. in any quantity

MICHIGAN FARM BUREAU BRAND Quality-Purity-Service SEEDS

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BOX C-3 SEED DEPARTMENT BOX C-3
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Whether you have only a few colonies or five hundred, we believe you will like them and they will prove a worthy addition to your yard. They are a bright, hustling, three-banded strain bred primarily for honey production, but also for gentleness and color. We have spared neither labor nor expense to make them the very best. We begin shipping about April 15th.

Price of Packages, April and May, F. O. B. Shipping Point, by Express.

1-pound package	$2.25	25 or more	$2.15	50 or more	$2.00
2-lb. package	3.75	25 or more	3.50	50 or more	3.35
3-pound package	5.25	25 or more	5.00	50 or more	4.85

Add price of queen wanted to package price given above.

Price of Queens, April and May.

Untested, each	$1.25	Ten or more	$1.15 each	25 or more	$1.00 each
Select Untested	1.35	Ten or more	1.25 each	25 or more	1.15 each
Tested, each	2.00	Ten or more	1.75 each		

We guarantee safe arrival and satisfaction.

W. D. ACHORD, FITZPATRICK, ALABAMA.

Finest Basswood—
—Finest Sections

The A. I. Root Company's portable saw mill at Medina cutting up basswood logs specially selected by Root timber experts. The lumber for millions of sections is sawed annually by this mill.

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Gleanings in Bee Culture

"May----painting pictures mile on mile."

—Emerson

VOLUME L MAY, 1922 NUMBER 5

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Tin Honey Containers

5-lb. Pails, per 50	$ 3.75
5-lb. Pails, per 100	7.00
10-lb. Pails, per 50	5.50
10-lb. Pails, per 100	10.50
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50,000 4¼x4¼x1½ plain... $8.50 per 1000
25,000 4¼x4¼x1¾ beeway 10.00 per 1000

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A. H. Rusch & Son Co.

Reedsville, Wisconsin

$1 *Order Your Queens Now* $1

Pay two weeks before shipment. Just think of it! Only one dollar for one of my bright three-banded Northern-bred Italian queens. After nineteen years of select breeding, I have produced a strain of bees that get the honey and stand the northern winter. Last year every order was filled by return mail; expect to do the same this year.

This is the kind of letters I receive daily:

> "Dear Mr. Major:
>
> "How early [illegible] could you fill an order for one dozen Italian queens? My [illegible] Italian bees [illegible] shown them to be extremely gentle, superior as workers and unexcelled in the beautifully white and even capping of the honey.
>
> "Yours very truly,
> "Orel L. Hershiser."

Mr. Hershiser is one of our State inspectors and has been a beekeeper almost all his life; also inventor of the Hershiser wax press. "Does he know good bees when he sees them?" "Does a duck swim?" I guarantee pure mating, safe arrival, free from disease and health certificate furnished with each shipment.
Select untested, from 1 to 100, $1.00 each. Select tested, $1.50 each. Extra-select breeders, $5.00 each. All candy in queen-mailing cages mixed to government regulations. All orders greatly appreciated and acknowledged the same day received.

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1922 Bees and Queens of Quality *1922*

Get your orders in early.

3000 Nuclei headed with young Italian Queens ready to serve you on early spring orders.

April, May and June

Untested Queens	$1.50	25 to 99, $1.30
Sel. Untested Queens	1.75	25 to 99, 1.50
Tested Queens	2.25	25 to 99, 2.00
Select Tested Queens	2.75	25 to 99, 2.25

July to November

Untested Queens	$1.25	25 to 99, $1.00
Sel. Untested Queens	1.50	25 to 99, 1.25
Tested Queens	2.00	25 to 99, 1.50
Select Tested Queens	2.25	25 to 99, 2.00

Write for prices on 100 or over.

1 1-frame Nucleus with Tested Breeding Queen	$10.00
1-pound Package Italian Bees	$2.25
2-pound Package Italian Bees	3.75
3-pound Package Italian Bees	5.25

Quantity prices on application.

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LARGE CAPACITY
LONG EXPERIENCE
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W. W. BOYER & CO. INC
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Entered as second class mail matter at the Postoffice at Medina, Ohio. Published monthly. Space occupied by reading matter in this issue, 53 per cent; advertising, 47 per cent.

THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

Editorial Staff

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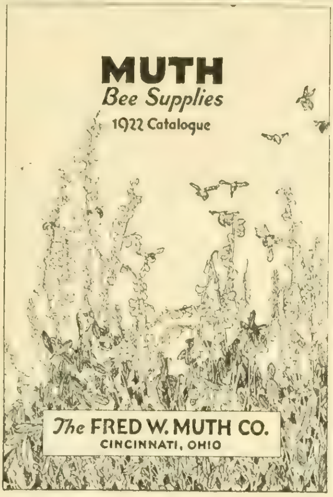

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You need our new 1922 bee supply catalog more than ever before. Have you received one? Many new articles are listed for the saving of labor and greater honey production. Our attractive prices, superior quality and prompt service will always be appreciated by beekeepers.

Send a list of your requirements to us.

THE FRED W. MUTH COMPANY,
Pearl and Walnut Streets,
Cincinnati, Ohio.

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Send in a list of your needs of BEE SUPPLIES for the coming season and get quotations on it.

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The Kind You Want and the Kind That Bees Need

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For Sale by all Dealers.

HONEY MARKETS

U. S. GOVERNMENT MARKET REPORTS.

Information from Producing Areas (First Half of April).

CALIFORNIA POINTS.—Outlook continues favorable for a heavy honey flow, if weather conditions are normal. Supplies of white honey are practically cleaned up, but lower grades are more plentiful. Lack of export demand for amber honeys is depressing to prices. As syrups and sugars are now down in price, honey sold in competition with these sweets must conform to their levels.

PACIFIC NORTHWEST.—Honey plants reported two weeks late but otherwise promising. Stores are said to be very light, with many colonies being fed.

INTERMOUNTAIN REGION.—Heavy winter losses in unprotected apiaries continue to be reported, reaching as high as 70% in some sections. Hives properly protected have come through fairly well. Some pollen has been gathered, and brood-rearing, which is badly needed, has started in the strongest colonies. Stores are accordingly being rapidly used up. Stocks of extracted honey continue to move fairly readily, and extracted honey will probably be nearly cleaned up before the new crop is ready. Considerable comb may be carried over, as little interest is observable in this class of goods. Carlot sales of white sweet clover and alfalfa range 8-8½c per lb., f. o. b., with less-than-carlot sales in 5-gal. cans up to 12c per lb. The price of comb is lower; carloads of fancy and No. 1 white reported selling at $3.00-3.50; few, $4.00 per 24-section case. In Arizona, colonies are breeding up strongly. Prospects are good in this section for a heavy mesquite flow, and several localities report the flow already on.

TEXAS POINTS.—Bees are building up and many colonies are said to be preparing to swarm. Mesquite in southwest Texas appears spotty. Some sections report plants heavy with buds; others that blossoms will be light. Other honey plants said to be coming on well. Crop outlook generally more favorable, due to recent rains, which in some areas have totaled 10 inches since last report. Present nectar flow only enough for use in the hives. Practically no sales reported.

EAST CENTRAL AND NORTH CENTRAL STATES.—Colonies are reported in good condition and are said to have come through unusually well. Bees are rather short of stores, however, and many colonies will need to be fed. Prospects bright for coming season. Clover has been helped by recent heavy rains and is showing up well. Supplies becoming exhausted. Few sales white clover in 5-gal. cans reported in less-than-carlots at 11½-14c per lb., with few large lot quotations during past month of 10-11c per lb. Trade in bee supplies in Michigan said to exceed that of most recent years for March and early April. Small lot sales white clover comb reported at $4.50 per case.

PLAINS AREA.—Some colonies reported to have suffered heavy losses due to lack of stores; others came through fairly well. Many colonies requiring spring feeding to prevent starvation. Sweet clover prospects good if season favorable, but white clover outlook not good due to lack of snow during winter over much of area. Recent heavy fall of snow and rain will help. Supplies almost exhausted. Few sales 5-gal. cans white extracted reported 10-13½c for small lots.

SOUTHEASTERN SECTION.—The spring flow is now on, but little surplus stored to date, as colony condition generally below normal. Most colonies are living on what they gather. High water in Lousiana swamps should prolong spring flow at least two weeks in that state, while Georgia reports that rain is needed. Florida has a small crop of orange blossom honey. Saw palmetto is blooming in that state, but due to extremely dry weather is yielding little honey. It is also said to be too dry for gallberry nectar. Heavy winds said to be reducing amount of bloom in Florida. Demand has increased recently in some sections. Few sales tupelo extracted reported from Georgia in barrels at 10c per lb. Package bee shippers are beginning to get out a few early orders, but are later than usual with the bulk of their orders.

NORTHEASTERN STATES.—Fruit trees are far ahead of normal, and plenty of pollen is also available from maples. Brood-rearing is advancing rapidly. Clover and other plants generally promise well. Bees are said to have wintered the best in years with only light losses thus far. Some colonies sufficiently supplied with stores, but many others must be fed liberally or heavy loss will result. Very few sales, as supplies practically exhausted.

Telegraphic Reports from Important Markets.

Arrivals include receipts during preceding two weeks.

BOSTON.—Light demand and movement for both comb and extracted. Comb: Sales to retailers, New York, 24-section cases No. 1, white clover, $6.50-7.00; Vermont, 20-section cases No. 1, white clover carton stock $6.50-7.00. Extracted: Sales to confectioners and bottlers, Cuba and Porto Rico, amber 80-85c per gal.; California, white, sage, 13½-16c per lb. Brokers carlot quotations, delivered Boston basis, per lb., California, light amber 8-9c, amber 7-7½c.

CHICAGO.—Demand and movement unusually slow, some dealers doing practically nothing. Low prices of sugar syrups given as main reason for slow movement. Prices remain about the same. Extracted: Sales to bottlers, candy manufacturers and bakers, per lb., Arizona, Idaho and Montana, alfalfa and sweet clover white 10½-11c, light amber 9-9½c; Minnesota and Wisconsin, mixed white, basswood and clover, 11-11¾c; occasional small sales 12½c. California, mixed mountain flowers white 11c. Comb: Sales to retailers, 24-section cases Iowa, clover No. 1, $4.75-5.00; No. 2, $3.00-4.00; Idaho and Montana, alfalfa No. 1. $4.50-5.00. Beeswax: Receipts moderate. Demand and movement moderate, market has been generally steady for past two weeks but just at present is a trifle easier. Sales to wholesale druggists, laundry supply houses and harness makers, per lb. California, Arizona, Idaho and Montana, best light 26-29c, dark 23-25c. South and Central American, light 21-25c, dark 15-17c.

MINNEAPOLIS.—Comb: Supplies liberal. Demand and movement slow, market dull. Sales to retailers, Western, 24-section cases alfalfa and sweet clover mixed No. 1, $5.00-5.50; No. 2, $4.50. Extracted: Demand and movement light, market steady. Sales to retailers, confectioners and bakers in 5-gal. cans: Western, light amber alfalfa and sweet clover, 12c per lb; Minnesota, white clover, 15c per lb.

NEW YORK.—Domestic receipts light, foreign receipts limited. Supplies rather light. Demand moderate, market steady. Extracted: Spot sales to jobbers, wholesalers, confectioners, bakers and bottlers, domestic, per lb., California, light amber alfalfa 7½-8½c; light amber sage, 9-10c; white sage, 11-12c; white orange blossom, 12-13c, few 14c; Intermountain Region, white alfalfa and sweet clover, 10½-11c; New York, white clover. 11-12c; buckwheat 7-8c. South American, refined best, 65-70c per gal.; poorer low as 60c per gal. Beeswax: Foreign receipts limited. Supplies limited. Demand fair, market firm. Spot sales to wholesalers, manufacturers and drug trade, per lb., South American and West Indian, light best, 25-27c; few high as 50c; poorer low as 23c; dark. 18-20c; African, dark, mostly 19-20c; few, 21c.

PHILADELPHIA.—Practically no receipts. Supplies generally very light. There seems to be no demand or movement for bulk stock but bottled goods are reported meeting a fair demand and prices holding firm. Beeswax: Supplies light. Market again slightly stronger. Sales to manufacturers, per lb., South American light, 25½c; African, dark, 17½-18½c.

ST. LOUIS.—Demand reported light, movement slow, market quiet. Comb: Sales to retailers in small lots of 24-section cases, Colorado and Northwestern, white clover and alfalfa No. 1, heavy, $5.50-6.00. Extracted: Sales to wholesalers and jobbers, per lb., California, light amber alfalfa, mostly around 9c; Southern, light amber, various mixed flavors, few sales, 9c. Beeswax: Ungraded average country-run wax quoted nominally at 23c per lb. to jobbers.

H. C. Taylor, Chief of Markets.

Special Foreign Quotations.

CUBA.—Honey is quoted at 40c a gallon; wax, 30c a quintal. Adolfo Marzol.

Matanzas, Cuba, April 8.

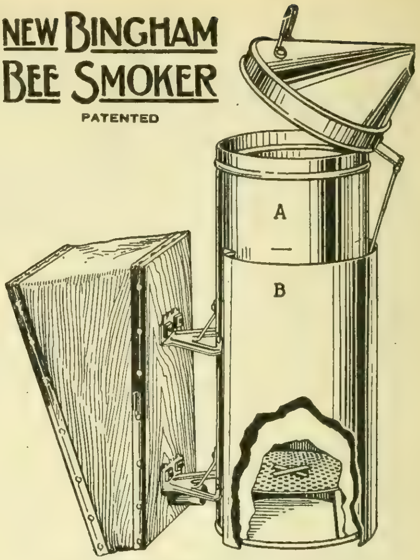
The Opinions of Honey Producers Themselves as Reported to Gleanings in Bee Culture.

Early in April we sent to actual honey producers the following questions: 1. What portion if any of the 1921 crop is still in the hands of producers in your locality? Give answer in per cent. 2. What prices are producers receiving for extracted honey at their station when sold to large buyers? 3. What are prices to retailers in small lots? (a) Comb honey, fancy or No. 1, per case? (b) Extracted honey in 5-lb. pails or other retail packages? 4. How is honey now moving on the market in your locality? Give answer in one word as slow, fair, rapid. 5. What is the condition of the colonies in your locality compared with normal as to numbers of bees and stores? Give answer in per cent. (a) Number of bees? (b) Amount of brood? (c) Amount of stores for spring brood-rearing? 6. What is the condition of the honey plants at this time in your locality as compared with normal? Give answer in per cent. 7. How does the early honey flow thus far compare with normal in your locality? Give answer in per cent. The answers as returned by our honey and bee reporters are as follows:

State.	Reported by	Crop Unsold.	Extr. Wh'sale.	To Retailers.		Movem't.	Colonies.			Plant. Cond.	Honey Flow.
				Comb.	Extr.		Bees.	Brood.	Stores.		
Ark.	J. V. Ormond	0					100	150	150	150	
Ark.	J. Johnson	0					100	110	100	100	
B. C.	W. J. Sheppard	0					75	75	75	100	
Cal.	M. C. Richter	20	$.11		$1.25	Rapid	70	70	60	60	60
Cal.	L. L. Andrews		.10	$6.00	.90	Fair	100	100		100	75
Cal.	G. Larinan	10	.11			Fair	75	75	75	100	
Cal.	M. A. Sayler	2	.08	4.00	.75	Fair	90	90	90	100	100
Colo.	B W. Hopper	0				Slow	75	75	80	75	
Colo.	J. H. Wagner		.12	5.50	.75	Fair	85	85	100	90	
Colo.	J. A. Green		.12			Slow	95	95	90	100	
Conn.	A. Latham					Fair	100		100	100	
Fla.	C. C. Cook	10	.11		.75	Fair	100	100	125	125	100
Fla.	H. Hewitt	25			.85	Slow	100	100		125	100
Fla.	W. Lamkin	2	.11		.65	Slow	100	100		100	25
Ga.	J. J. Wilder	15	.10		.75	Slow	100	100	100	100	100
Ill.	C. F. Bender	0		6.00		Good	95	100	75	110	
Ill.	A. L. Kildow	1				Rapid	110		98	105	
Ind.	J. Smith	0				Fair	75	100	25	100	
Ind.	E. S. Miller	25		6.00	1.00	Slow	100	100	90	95	
Iowa.	W. S. Pangburn	10	.14		.95	Fair	100			100	
Iowa.	E. G. Brown	10	.10		.80	Fair	100	90	80	100	
Iowa.	F. Coverdale	0				Fair	100	100	25	70	
Kan.	C. D. Mize	10		6.00	.75	Slow	100	100	75	120	
Kan.	J. A. Nininger	0		6.00	.75	Slow	90	75	90	90	
Ky.	P. C. Ward					Slow	100	100	100	100	
La.	E. C. Davis	10	.09		.75	Fair	100	100	100	100	150
Maine.	O. B. Griffin	5		7.00		Slow	100		90		
Md.	S. G. Crocker, Jr.	5		4.85	.75	Slow	90	90	90	100	
Mass.	O. M. Smith	0				Slow	100	100	100	100	
Mich.	I. D. Bartlett	5			.85	Slow	115	100	100	125	
Mich.	F. Markham	5	.12		.80	Slow	125	100	100	125	
Mich.	L. S. Griggs			6.00	1.00	Slow	100		90	100	
Miss.	R. B. Willson		.07	5.25	1.00	Fair	100	100	100	100	125
Mo.	J. W. Romberger	0	.12	6.25	.95	Fair	80	50	50	75	
Nev.	E. G. Norton	0		6.00		Slow			75	100	
Nev.	L. D. A. Prince	0				Fair	50	25	25		
N. J.	E. G. Carr	10				Slow	90	90	100	90	
N. Y.	Adams & Myers			6.00	1.00	Rapid	100	85	80	30	
N. Y.	G. B. Howe				1.15	Fair	95	100	75	100	
N. Y.	N. L. Stevens	0					110	100	100	100	
N. Y.	F. W. Lesser	0		4.80	1.00	Slow	80	75	125	90	
N. Y.	A. J. Spahn	10				Slow	100	100	100	100	
N. C.	C. S. Bumgarner						110	125	100	125	
N. C.	C. L. Sams	0				Fair	100	100	90	100	
Ohio.	E. G. Baldwin						95	95	100	85	
Ohio.	F. Leininger		.10	4.80	.75	Fair	100		85	80	
Ohio.	J. F. Moore	5	.12	4.50	.85	Slow	75	50	50	100	
Okla.	J. Heueisen	0					60	50	20	100	
Okla.	C. F. Stiles				1.00	Slow	100	100	55	100	
Ore.	E. J. Ladd			3.50		Slow	60	90	90	100	
Ore.	H. A. Scullen	0				Fair				100	
Pa.	G. H. Rea	0				Fair	100	100	100	100	
Pa.	H. Beaver	2			.60	Slow	100	100	100	100	
Pa.	C. N. Greene	5	.08	5.50	.65	Slow	100	90	20	100	
Pa.	D. C. Gilham	6		7.00	1.00	Fair	100	100	75	110	
R. I.	A. C. Miller	0				Slow	100	100	150	100	
S. C.	A. S. Conradi	0		6.00		Fair	100	100	95	100	
S. D.	L. A. Syverud	5		3.85	.60	Fair	100	90	90	100	
Tenn.	J. M. Buchanan					Slow	100	110	90	80	
Tenn.	G. M. Bentley	0			1.10	Slow	100	100	50	75	
Texas.	J. N. Mayes	1					25	25	50	60	50
Texas.	T. A. Bowden	8			.75	Slow	100	110	100	90	100
Utah.	M. A. Gill	0		4.50		Fair	100	75	100	100	
Vt.	J. E. Crane	0			1.25	Slow	85		90	85	
Va.	T. C. Asher	0				Slow	85		90	85	
Wash.	W. L. Cox	0		6.00		Fair	90	50	100	90	
Wash.	G. W. York		.11	6.00	.85	Fair	50				
Wash.	G. W. B. Saxton	20	.20		1.10	Slow	75	75		75	
W. Va.	T. K. Massie	0					100	100	90	100	
W. Va.	W. C. Griffith	0					100	100	90	100	
Wis.	N. E. France	5			.80	Fair	75	50		100	
Wis.	E. Hassinger, Jr.	2			.85	Slow	100	100	100	95	
Wis.	H. F. Wilson	2	.11		1.00	Fair	100	75	75		
Wyo.	A. D. Brown	30		5.25	.90	Slow	75	60	40	110	

NEW BINGHAM BEE SMOKER

PATENTED



BIG SMOKE—With Shield
Fire Pot, 4 x 10.

The Smoker

You Ought to Own

THE most important invention in beekeeping, as little can be accomplished without the Bee Smoker.

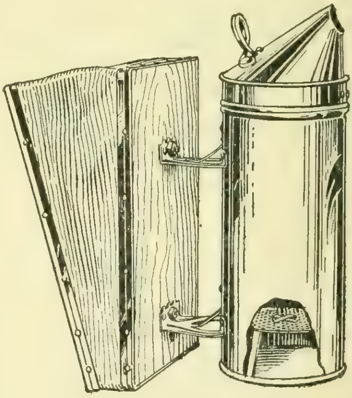
The *new Bingham Bee-Smoker is the most* efficient and durable machine on the market. The standard for over 40 years in this and many foreign countries, and is the all-important tool of the most extensive honey producers of the world.

Comes with metal legs, metal binding and turned edges. The four larger sizes have hinged covers. The fire grate is of very substantial material, with an abundance of draft holes, the 4-inch size having 381 holes, equal to an opening of 2-inch square.

A valve in the bellows of the larger sizes makes the Smoker respond to the most delicate touch.

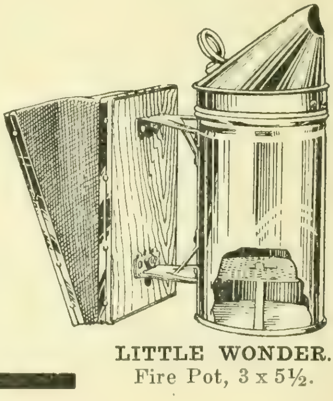
The new Bingham comes in six sizes, including the Big Smoke, which is furnished both with and without shield. The larger sizes are best, as they hold more fuel, give more smoke, require filling less often, and are especially recommended to those who work with their bees several hours at a time.

Write for our complete catalog of bee supplies and accessories. Special circular of all sizes of Bingham Smokers free for the asking.



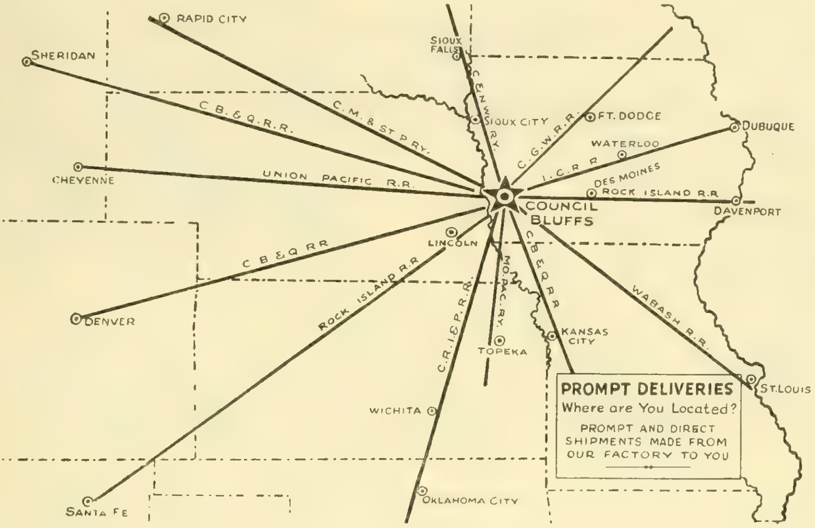
CONQUEROR.
Fire Pot, 3 x 7.

A. G. WOODMAN CO.
238 Scribner Ave., N. W.
GRAND RAPIDS, MICH., U.S.A.



LITTLE WONDER.
Fire Pot, 3 x 5½.

ARE YOU IN A HURRY?


RAPID CITY
SHERIDAN
SIOUX FALLS
C. & N.W. RY.
C. B. & Q. R. R.
C. M. & ST. P. RY.
SIOUX CITY
C. G. W. R. R.
FT. DODGE
DUBUQUE
WATERLOO
I. C. R. R.
DES MOINES
CHEYENNE
UNION PACIFIC R. R.
ROCK ISLAND R. R.
COUNCIL BLUFFS
DAVENPORT
LINCOLN
C. B. & Q. R. R.
C. B. & Q. R. R.
ROCK ISLAND R. R.
MO. PAC. RY.
C. R. I. & P. R. R.
WABASH R. R.
DENVER
KANSAS CITY
TOPEKA
ST. LOUIS
PROMPT DELIVERIES
Where are You Located?
PROMPT AND DIRECT SHIPMENTS MADE FROM OUR FACTORY TO YOU
WICHITA
SANTA FE
OKLAHOMA CITY

We can make prompt shipments to you, over any one of twelve lines?

Special attention is given to all orders, to see that they are dispatched at once, over the shortest route, to your station. We plan to save the beekeeper every possible cent in freight hauls, and time in delivery.

We will give your business just such thoughtful and personal attention, in this your rush season.

The A. I. Root Company of Iowa

Council Bluffs, Iowa.

DON'T BE CONFUSED

¶ In buying a larger hive than the ten-frame Langstroth hive. Quinby invented an eight-frame hive with frames about 11¼ inches deep. It was long ago found inadequate in size and was made into a ten-frame hive, a size we have offered for some years.

¶ Charles Dadant found the ten-frame Quinby depth hive needed another frame. He also found it a beekeeping necessity to change this hive further, and evolved the 1½-inch spacing from center to center of the frames. This is the real principle to be considered in the

MODIFIED DADANT HIVE

(REGISTRATION APPLIED FOR)

Deep frames 11¼ inches. Frame space ventilation, swarm control easier, 6¼-inch extracting frames.

Large one-story brood-nest, adequate winter stores, greater brood-room, standard covers, bottoms.

Present equipment may be used as super equipment on Modified Dadant brood-chambers. Covers and bottoms for this hive are the familiar metal roof cover with inner cover and regular standard bottoms, except for larger dimensions.

The standard of workmanship is "Beeware." Write for free booklet on this hive to

G. B. LEWIS COMPANY, Watertown, Wisconsin.
DADANT & SONS, Hamilton, Illinois.

There's a Distributor near you.

HONEY SECTIONS

Just a reminder that our sections are made from Northern Wisconsin basswood; this makes them JUST A LITTLE BETTER. This basswood is all winter-sawed, that's why our sections are JUST A LITTLE WHITER and look JUST A LITTLE BETTER. We are working overtime to give our customers JUST A LITTLE BETTER SERVICE.

We have a full line of hives, supers, hive-bodies, frames, foundation and all other Standard Supplies that are JUST A LITTLE BETTER; get our catalog and know why.

August Lotz Co.
BOYD, WISCONSIN.

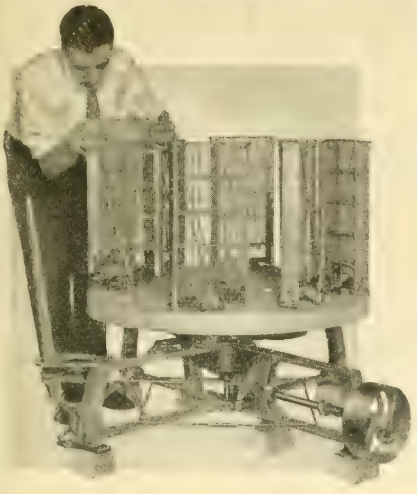
Mr. Beekeeper!

The time will soon be at hand when you will need your supplies. Our stock is limited, so we urge you to place your order at once.

Have you our 1922 catalog? If not, write for one today.

The A. I. Root Company
873 Massachusetts Avenue
Indianapolis, Ind.

LEWIS EXTRACTORS



Lewis-Markle Power Honey Extractor-Tank Removed.

Made in 4 and 8 frame sizes. Accommodates 2 sizes of baskets, power operation, machinery underneath, no vibration, tank and baskets instantly removable for cleaning. A commercial success. Circular free. Address:

G. B. LEWIS COMPANY,
WATERTOWN, WISCONSIN, U. S. A.
There's a Distributor Near You.

The May B's R Busy

May B-U-R in need of supplies before the rush begins.

"Never put off 'til to-morrow what can be done today" is a pretty good maxim in the Bee Business.

Order now, when we can give you our best attention.

BEE PREPARED
BEE SATISFIED

F. A. SALISBURY
1631 W. Genesee Street
SYRACUSE, N. Y.

Better Way to Garden

Don't do garden work the slow back-breaking way. You can grow a far better garden, easier and with much less time and work.

BARKER

WEEDER, MULCHER AND CULTIVATOR

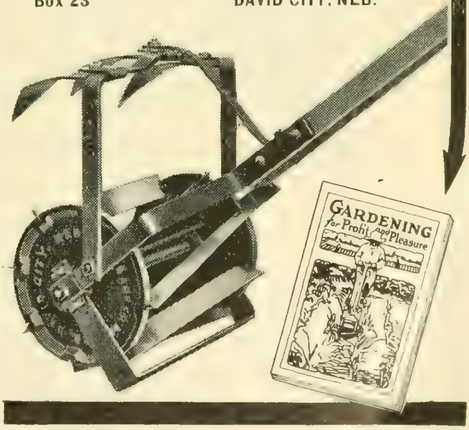
THREE MACHINES IN ONE

Simply push the BARKER along the rows (like a lawn mower). Eight blades revolving against a stationary underground knife destroy the weeds and in same operation break up the surface crust into a **level, porous, moisture-retaining mulch.** Aerates soil. Intensive cultivation. "Best Weed Killer Ever Used." Has leaf guards, also shovels for deeper cultivation. A boy can run it—do more and better work than 10 men with hoes.

Write Us Today
for FREE Booklet.

Let us tell you about this machine and how to raise bigger, better gardens—make gardening a pleasure. A valuable book, illustrated. Gives prices, etc. A card brings it. Write us today. Use coupon below.

BARKER MFG. CO.
Box 23 DAVID CITY, NEB.



Barker Mfg Co., Box 23, David City, Neb.

Gentlemen: Send me postpaid your free booklet and Factory-to-User offer.

Name ....

Town ....

State............... Box or RFD...........

ROOT QUALITY QUEENS

SOMETHING ABOUT THEM.

Fifty years of continuous breeding up to the present Root Quality Queens and Bees. A. I. Root bought the first mother of this strain from Langstroth 55 years ago. No expense or pains has been spared to develop this strain of improved three-banded leather-colored Italians.

PRICES OF ROOT QUALITY QUEENS.

April 15 to June 30—

	1 to 9.	10 to 24.	25 to 49.	50 to 99.	100 or over.
Untested	..$2.00 ea.	$1.80 ea.	$1.70 ea.	$1.60 ea.	$1.50 ea.
Sel. Untested	2.50 ea.	2.25 ea.	2.10 ea.	2.00 ea.	1.85 ea.
Tested	3.00 ea.	2.70 ea.	2.55 ea.	2.40 ea.	2.25 ea.
Sel. Tested.	3.50 ea.	3.15 ea.	3.00 ea.	2.80 ea.	2.60 ea.

July 1 to November 1 —

	1 to 9.	10 to 24.	25 to 49.	50 to 99.	100 or over.
Untested	...$1.50 ea.	$1.40 ea.	$1.35 ea.	$1.25 ea.	$1.15 ea.
Sel. Untested	2.00 ea.	1.90 ea.	1.80 ea.	1.70 ea.	1.60 ea.
Tested	2.50 ea.	2.35 ea.	2.25 ea.	2.10 ea.	2.00 ea.
Sel. Tested..	3.00 ea.	2.85 ea.	2.70 ea.	2.55 ea.	2.40 ea.

PRICES OF BEES IN COMBLESS PACKAGES BY EXPRESS.

April 15 to September 1 —

C310700—1-pound package..$3.00; 25 or more..$2.85 ea.
C310800—2-pound package.. 5.00; 25 or more.. 4.75 ea.
C310801—3-pound package.. 7.00; 25 or more.. 6.60 ea.

Add price of queen wanted to package price given above.

Early deliveries will be made from our Alabama apiaries.

THE A. I. ROOT COMPANY, MEDINA, OHIO, U. S. A.

WE ARE PREPARED TO TAKE CARE OF YOUR RUSH ORDERS

WE ship thousands of bees all over the U. S. A. and Canada. ¶ Special attention given to small orders. ¶ Queens bred from the best honey-gatherers with all other important points taken into consideration. ¶ Safe arrival guaranteed. ¶ Send for special circular for shipping after May 15th. ¶ Can take care of your rush orders for shipping before May 15, at the following prices:

1-pound package, $2.25 each; 25 or more, $2.15 each.
2-pound package, $3.75 each; 25 or more $3.60 each
3-pound package, $5.25 each; 25 or more $5.00 each.
2-frame Nuclei, $3.75 each; 3-frame Nuclei, $5.25 each.
2-frame with 1 pound extra bees, $5.25 each.
1-frame with 2 pounds extra bees, $5.25 each.

(Add price of queen wanted when ordering packages.)

NUECES COUNTY APIARIES, CALALLEN, TEXAS

E. B. AULT, Proprietor.

Northwestern Headquarters for Italian Queens

The queen is the life of the colony. You cannot afford to keep poor queens or a poor strain of bees. I have been in the bee business for more than twenty years and have made every effort to improve the honey-gathering qualities of my bees by purchase of breeders and by selective breeding. I believe that my bees are unsurpassed by any. When you buy Untested Queens from me you are getting select untested queens. I will begin mailing queens about June 1.

Prices June 1 to October 1:	1	6	12	50	100
Untested Italian Queen......	$1.25	$7.00	$12.50	$50.00	$95.00
Tested Italian Queen.......	2.00	11.00			

I have no pound packages or nuclei for sale.

J. D. HARRAH, Route 1, FREEWATER, OREGON

Queens *Bees*

Forehand's 3-Bands

One Queen for $1.00

They Satisfy. Why?

Because they are guaranteed to be as good as money can buy. Not a cheap queen but a queen of the best at a cheap price. Every queen guaranteed to reach destination in first-class condition, to be purely mated and give perfect satisfaction or money back. Orders filled by return mail.

Untested: 1 to 25, $1.00 each; 25 to 50, 90c; 50 to 100, 80c each. Select Untested, 1 to 25, $1.25 each. Tested, $2.00 each, or 12 for $20.00. One lb. pure Italian bees with queen, $3.00. Two lbs. pure Italian bees with queen, $5.50 Ten of more 2-lb. packages, $5.00 each.

N. FOREHAND, RAMER, ALABAMA.

Package Bees
---AND---
Reliable Queens

GOLDEN AND THREE-BANDED ITALIANS

We are now in a position to accept orders for queens and bees for spring shipping in large quantities. We have the stock and experience necessary to handle your orders, whether large or small.

1-lb. Package with Queen..	$3.00
2-lb. Package with Queen..	5.00
3-lb. Package with Queen..	7.00
Tested Queen 1, $2.50; six..	12.00
Untested ....1, 1.25; six..	7.00
Select Untest. 1, 1.50; six..	8.00

We are in position to fill orders from 100 to 5000 queens or packages. Safe arrival and satisfaction guaranteed. Terms, 25% to book orders.

E. A. SIMMONS
GREENVILLE - - - - ALABAMA

We Furnish Colonies and Nuclei of
Italian Bees
in Hives and Shipping Boxes.

Tested Italian Queens - $2.00
Untested Italian Queens $1.50
6 Untested Ital. Queens $8.00

A full line of Apiarian Supplies always in stock. Let us quote you. Price list on request.

I. J. STRINGHAM
GLEN COVE, NASSAU
COUNTY, NEW YORK

ITALIAN BEES AND QUEENS

With two thousand strong, healthy colonies of Italian Bees to draw from, with experienced help and proper equipment we can fill all orders promptly. Write for price list and special prices in car load shipments.

SAFE DELIVERY AND SATISFACTION GUARANTEED.

	April	May	June
1-fr. nucleus with queen.	$4.00	$3.50	$3.00
2-fr. nucleus with queen.	5.50	5.00	4.50
3-fr. nucleus with queen.	7.00	6.50	6.00
4-fr. nucleus with queen.	8.50	8.25	7.75

POUND PACKAGES WITHOUT QUEENS

1 pound Italian Bees	$2.50
2 pounds Italian Bees	4.00
3 pounds Italian Bees	5.75

Add $1.50 for queen. 20% with order.

WEBER BROS. HONEY CO.
RIALTO, CALIFORNIA

High Quality
Queens, Nuclei and Package Bees
At Special Prices

Untested Queens—1, $1.00, 6 $5.50; 12, $10.00; 25, $20.00. Select Untested —1, $1.20; 6, $6.50; 12, $12.00; 25, $23.50. Select Tested—$2.00 each.

2-frame nucleus	$3.25
3-frame nucleus	4.50
1-lb. package	2.00
2-lb. package	3.25
3-lb. package	4.50

Add price of queen wanted.

These special prices on queens and bees are good only for delivery on any date you desire after May 15th. Fullest satisfaction guaranteed.

FRANK BORNHOFFER
MT. WASHINGTON, OHIO.

Strong Nuclei
FOR
Little Money

Prepaid to your Town or Station Any Month of the Year.

From stock originally bred by Henry Alley and E. L. Pratt more prominently known to the beekeepers of 15 years ago as SWARTHMORE.

This stock was bred and selected for upwards of 20 years by the above well-known breeders. Since 1909 I have continued this work of selection. Have 600 colonies to draw from.

1-fr. nuclei with untested queen	$6.00
2-fr. nuclei with untested queen	6.75
3-fr. nuclei with untested queen	7.25

DELIVERED FREE in 1st, 2nd, 3rd, 4th and 5th parcel post zone from N. Y. City Additional charge of 10% beyond that zone.

GUARANTEED SAFE DELIVERY.
NO FOUL BROOD IN PORTO RICO.

TROPICAL APIARIES, Aibonito, Porto Rico
PENN G. SNYDER.

THREE-BANDED
ITALIAN QUEENS
WITH PACKAGE BEES AND NUCLEI

All I have for sale are guaranteed to please. Can start your shipments as early as April 20th. Prices for nuclei and packages, furnished with vigorous Italian queens, as follows:

One 2-frame nucleus with untested queen, $5.00; in dozen lots, $4.50. One 2-frame nucleus with tested queen, $5.50; in dozen lots, $5.00. Two-lb. package hybrid bees with untested queen, $5.50; twelve, $5.00; in lots of 25 or more, $4.75.

Disease of any kind has never been recorded in our county. Health certificate and instructions accompany each package. Satisfaction is guaranteed, and you are to be the judge. 25% deposit books your order, balance due at time of shipment. I have arranged for better railway service by shipping from Clarksville.

Address all orders to
BAUGHN STONE
CLARKSVILLE, TEXAS.

Rock-Bottom Prices on Pure Stock Italian
Bees and Queens

FOR BEGINNER AND EXTENSIVE HONEY PRODUCER.

Satisfaction and safe arrival guaranteed. Packages arriving in bad order replaced to satisfaction of customer on receipt of express bad order bill signed by express agent, said bill to describe condition of shipment. Queens replaced if dead queen returned by return mail in her own cage. My queens are light-colored, large and prolific. Every queen sent out reared by me personally. Pure mating and reasonable satisfaction guaranteed.

PURE MATING GUARANTEED.

Selected Untested	$1.50 each
Untested, 1 to 11 inclusive	1.25 each
Untested, 12 to 50 inclusive	1.15 each
Untested, 50 or more	1.00 each

PRICE OF PACKAGES,
F. O. B. Hamburg, La.

2-lb. with comb	$3.50
3-lb. with comb	4.50
5-lb. with two combs	6.75

Add price of queen wanted to price of package. Certificate of inspection with each shipment.

J. L. ST. ROMAIN
WHITE CLOVER FARM AND APIARY
HAMBURG, LA.

Bees & Queens

Mr. Beekeeper: Buy a good queen while you are buying. TRY NORMAN BROS.' pure 3-banded Italian bees and queens. We have the stock, equipment and experience. Our output will be 1000 or more queens per month, our prices are right, our queens are equal to any. Hundreds of America's greatest honey producers order from us. Follow their example. You risk not a penny; after you have given our queens a fair test and you are not satisfied, just return them and we will replace or refund your money. Isn't this a fair proposition to any one that wishes to purchase queens? Our bees are hardy, gentle, prolific, disease-resisting and honey gatherers. Orders filled by return mail or your money refunded.

PRICES—	1	6	12	100
Untested queens	$1.00	$5.50	$10.00	$72.00
Select Untested..	1.20	6.50	12.00	90.00
Tested queens...	2.00	11.00	21.00	
Select Tested...	2.50 each			

One 2-lb. package bees, $3.75; 12 or more, $3.50 each. Add prices of queens wanted. Guarantee pure mating, safe arrival and perfect satisfaction in U. S. A. and Canada.

NORMAN BROS.' APIARIES, NAFTEL, ALA.

I Pay Transportation Charges on Package Bees

1-lb. pkg., including young 3-banded queen	$4.50
2-lb. pkg., including young 3-banded queen	6.00
3-lb. pkg., including young 3-banded queen	7.50

THREE BANDED

25 cents per package less for twelve or more packages. Delivered to your address via parcel post. In comparing my prices with others, take in consideration you have no express charges to pay. Parcel post shipments go through quicker.

PRICES OF QUEENS AFTER MAY 15:

1 Select Untested....$1.00
5 Select Untested.... 4.75
10 Select Untested.... 8.50
25 Select Untested, 75c each

Orders filled by return mail. Pure mating and satisfaction guaranteed. It is left with customer to say what is satisfaction. No disease.

JASPER KNIGHT, Hayneville, Ala.

Collier's Bees & Queens

Breeding Queens Imported from Italy.
Three-Banded Italians Only.
Shipped When You Want Them.

Let me have your order for the 1922 season. My queens are bred by men who know how. Every order given my personal attention. All queens reared in strong two-story, ten-frame hives, under natural conditions.

Improve your weak, run-down colonies by using young, vigorous, three-banded Italian Queens from my imported stock.

You take no risk buying from Collier. If you are not satisfied I will replace or refund your money. Safe delivery guaranteed.

Untested, one to twenty-five, $1.00 each; twenty-five to fifty, $0.90; fifty to one hundred, $0.80. Select Untested, one to twenty-five, $1.25. Tested, $2.00 or $20.00 per dozen. Select Tested, $3.00 or $30.00 per dozen. Pound packages with select untested queens: 1-lb. packages, 1 to 12, $3.75 each; 12 or more, $3.50 each. 2-lb. packages, 1 to 12, $5.00 each; 12 or more, $4.75 each.

D. E. COLLIER, RAMER, ALABAMA.

Read What They Say About Our Bees

L. C. and Oscar Mayeux, Hamburg, La.

I must say that your package bees and way of doing business have proven successful. The several hundred packages I bought and sold from you without a single complaint; am sending you more orders.—E. D. Townsend North Star, Mich., June 20, 1921.

L. C. and Oscar Mayeux, Hamburg, La.

Gentlemen:—The 50 three-pound packages on frame honey came through in excellent shape. I find them away ahead of combless packages. I received 50 combless packages same day with yours, and yours are doing much better. I regret very much that I did not order the hundred from you.—Ed. Stewart, Port Hope, Mich., June 2, 1921.

L. C. and Oscar Mayeux, Hamburg, La.

Gentlemen:—The three-frame nuclei you shipped arrived in excellent shape this a. m. and I wish to thank you for your promptness. Your bees have taken well with my friends; one party wants three three-frame nuclei. Enclosed find check for $18.00 for same.—Globe Hatchery & Supply Co., Berne, Ind., June 18, 1921.

L. C. and Oscar Mayeux, Hamburg, La.

Dear Sirs:—Your record will show that you have shipped me one two-pound package bees with queen on frame brood and honey last May, and they prove a good buy; they paid for themselves, and made a very nice surplus. The frame brood was a good one and made it very easy to transfer to hive.—O. H. Mills, Forsyth, Montana, May, 1921.

Nuclei and Packages

In order to increase and better our shipping facilities, we found it necessary to combine our business. We are now offering the following: Two pounds bees one Root frame brood and honey, $3.75 each. Two-frame nuclei frames emerging bees with about one pound bees, $3.50. Three frames same as above, $4.35. Untested three-banded queen for above packages only, $1.00 each. Our last advertisement for this season. Shipment May 15th to June 15th, ship by express only, guarantee safe arrival and health certificate.

L. C. & OSCAR MAYEUX, HAMBURG, LA., Lock Box 15.

Superior Italian Bees and Queens

On account of being booked for three-fourths of our capacity we have been returning orders, as we make it a practice not to book for more than three-fourths of our capacity; then if we have bad weather, we can make deliveries on time. If we have reasonably good weather we will be able to supply another thousand packages in May. If your order is booked for more than prices below, you will get the benefit of these prices.

Package Bees and Nuclei, with Queen

1-pound package, $3.50; 10 or more, $3.00
2-pound package, 5.00; 10 or more, 4.35
3-pound package, 6.50; 10 or more, 5.85

Same price on one, two and three frame nuclei respectively.

Untested Queens to June 15....One, $1.25; 10 or more, $1.00 each
Untested Queens after June 15..One, $1.00; 10 or more, $0.75 each
Tested Queens to June 15........One, $2.00; 10 or more, $1.75 each
Tested Queens after June 15....One, $1.75; 10 or more, $1.50 each

Safe arrival and satisfaction guaranteed.

THE STOVER APIARIES, MAYHEW, MISSISSIPPI

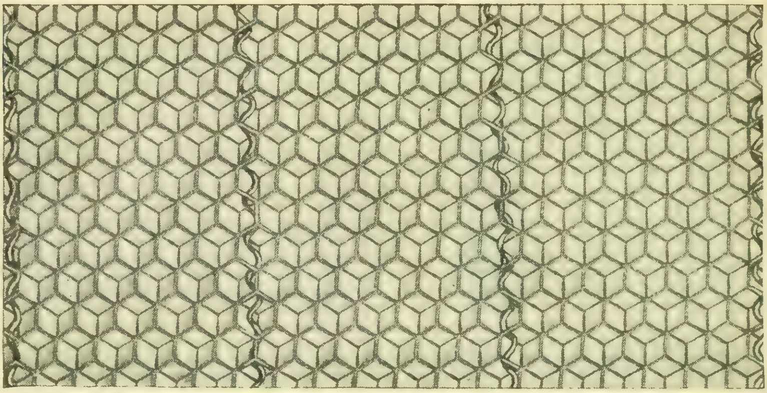
EPOCH MAKING!

DADANT'S

Makes non-sag comb.

WIRED

Cuts out cost and labor of wiring and imbedding.



Quickly accepted by bees.

NON-SAG

The finished comb a delight to the eye.

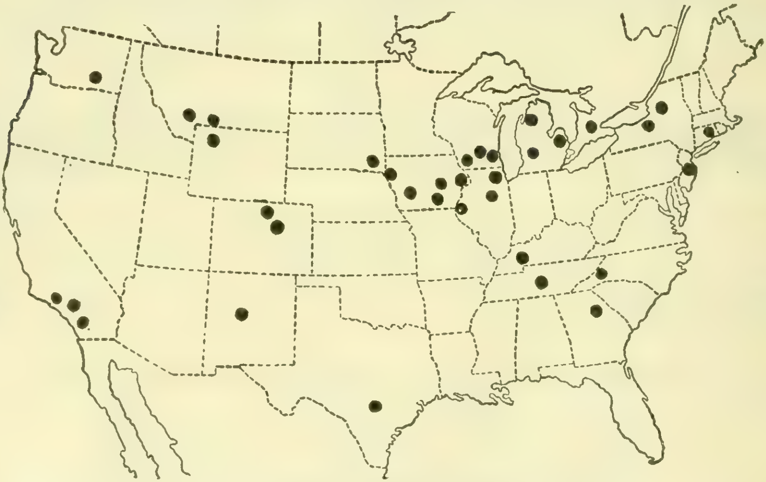
FOUNDATION

Tested by time and use

Dadant's Wired Foundation is not an experiment of a few months' time, but it is a carefully evolved specialty of a life-time of foundation specialists.

WHERE WIRED FOUNDATION HAS BEEN TESTED FOR OVER TWO YEARS.

Each dot represents an apiary of from 100 to 2,000 colonies, an average of over 400 colonies.



The total colonies in the apiaries represented is over 15,000.

THIS IS A REAL TEST.

Dadant's Wired Foundation, therefore, is not alone a Dadant product, but it is the final perfection of a needed improvement to which many beekeepers in all parts of the United States have contributed. The map shows the location of many of the biggest beekeepers in the country who have tested the foundation in their own apiaries, guided its development over a long period and who have finally given it their unqualified support.

Costs No More. Since Dadant's Wired Foundation cuts out the cost and labor of wiring, its extra price of 3c per pound above the catalog prices of old-style foundation is thus immediately and fully returned to the beekeeper.

Ask for Samples. A small mailing sample sent free on request. Wired Foundation may be used in new style split bottom-bar frames or in the one-piece bottom-bar frames with equal satisfaction. It is also adaptable to any size and style of brood or extracting frame

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EDITORIAL

To Make Thick Syrup That Will Not Granulate. No Acid Needed.

HAVING learned through items published in the newspapers that the Bureau of Chemistry of the U. S. Department of Agriculture is working on the problem of making heavier cane syrup and maple syrup so treated that they will not granulate, the Editor recently visited the sugar laboratory of the Bureau of Chemistry at Washington, to learn how this process can be applied to the preparation of syrup for fall feeding of bees. Some of the things learned through this visit may prove to be of great importance to beekeepers in the North who are seeking a perfect winter food for the bees.

By adding a substance called invertase, which is now being manufactured commercially, the Bureau of Chemistry has discovered that it is possible to make a sugar syrup as thick as honey that will stand indefinitely without granulation. The action of this material on the sugar syrup in changing the cane sugar (sucrose) into levulose and dextrose is similar to that which takes place when tartaric acid is added and heat applied; but the amount of material used and the nature of the substance are such that its use in making winter feed can not be objectionable.

But the great advantage of this method of partially inverting the cane sugar is that the inversion can be carried to the desired extent and then stopped completely by heating. As explained by H. S. Paine, who is in charge of this work, when the inversion is not carried far enough, the sucrose will crystallize out; and when the inversion is carried too far, the dextrose will crystallize out just as it does in honey in which inversion is practically complete. When the inversion is carried to a certain point and then stopped by reheating the syrup to destroy the invertase, there is a balance between the different kinds of sugar which prevents crystallization. It is therefore possible to make a thick sugar syrup which will stand without crystallization for long periods, whereas either ordinary sugar syrup or honey will sooner or later granulate. After the completion of certain experiments here, further reports will be published in these columns regarding this new process.

* * *

U. S. Post Office Department Prohibits Importation of Bees Through Mails.

LAST month we reported the action taken at the meeting called at Washington on March 9 by Dr. S. B. Fracker, acting as chairman of the committee appointed at the Toronto meeting of the American Association of Economic Entomologists, to devise means for the protection of the United States and Canada against the introduction of the Isle of Wight disease. As a result of this action the Post Office Department issued an order, on March 21, prohibiting the importation of honeybees through the mails from all foreign countries except Canada.

To prevent bees being sent into this country through other channels, a bill has been drafted to make it unlawful for any person to import or offer for entry into the United States any honeybees, except for experimental or scientific purposes by the United States Department of Agriculture. Provision is made by which the Secretary of Agriculture and the Secretary of the Treasury may make regulations admitting honeybees from countries where no dangerous bee diseases exist. Not only has the Isle of Wight disease been found in the French Alps, as reported in this journal last month, but it has recently been found to exist in Switzerland. It certainly now appears that it is high time to stop all importation of bees and queens from Europe if this disease is to be kept out of the United States and Canada; for, as was demonstrated last summer when bees containing some of the living mites which cause the diseases were received at the Bureau of Entomology at Washington, the mites could easily be introduced by the importation of queens and their attendants.

Australia has already prohibited further importations of bees from the United Kingdom and will, no doubt, now prohibit such importations from other countries as well.

Those who desire further information on the Isle of Wight disease should write to the Bureau of Entomology, Washington, D. C., asking for Department Circular 218.

LATER. Just as we go to press we learn that the bill to prohibit all importation of bees except under government supervision is to be introduced in the Senate immediately. Beekeepers should write to their Senators and Representatives at once asking them to support this bill.

* * *

Confusing Symptoms of the Brood Diseases Explained.

THE article on Brood Disease Variation by A. P. Sturtevant, specialist in the Bacteriology of Bee Diseases, Bureau of Entomology, U. S. Department of Agriculture, published in this issue, should clear up many of the puzzling questions which have been troubling those who are struggling with both American foul brood and European foul brood. This article explains why the appearance of larvae dead from European foul brood varies so greatly, and why in American foul brood the symptoms are so constant and uniform; why in typical European foul brood the larvae die before the cells are capped, while in American fool brood most of them die after the cells are capped, as well as the reasons for the exceptions to this which sometimes cause so much confusion. Those who have both these brood diseases in their locality should study this article carefully, for, by doing so, they should be able to distinguish between the diseases even when the symptoms are confusing.

* * *

Management Previous to the Honey Flow to Prevent Swarming.

AN EXCELLENT plan for reducing or preventing swarming when using the standard Langstroth hive in extracted-honey production is one that is usually not even recognized as a swarm-control measure because it is so intimately connected with the building-up of the colony previous to the honey flow. This plan, so far as the Editor knows, was first suggested by E. E. Coveyou and described in this journal in 1908 (pages 640 and 641) by E. D. Townsend, as follows:

> E. E. Coveyou of Petoskey, Mich., has a very good plan for handling his bees during the fore part of the honey flow. He uses ten-frame hives, and before the honey flow he gives the colonies another story of combs without putting an excluder between. The cells of these combs should be of the worker size, for the queen is allowed full sway through this story until the colony needs a third one. At the time this third story is given, the queen is placed below in the first story, a queen-excluder is put on, and then the third story of empty combs put over it. Finally, on top of all, the second story partly full of honey and brood is added. This plan has the advantage of giving the colony an abundance of comb room and also an unlimited amount of breeding space for the queen during the critical swarming period previous to the honey flow.

When the bees are wintered in a single story, the second story should be given a little before the combs in the lower story are completely filled with brood, honey and pollen, and at least several of the combs in the second story should be old dark brood-combs to attract the queen above promptly. Since in the North this second story should be given about the first of May (sometimes even the latter part of April in well-wintered colonies) the hives, if packed, should be left in the packing cases and the packing material replaced around the upper story. If enough early honey is stored in the upper story to crowd the queen there (which often happens with strong, well-wintered colonies in the spring even when weak ones in the same apiary are starving), a third story of empty combs should be given even though the main honey flow is still several weeks in the future. To save trouble when putting the queen down later, it is well to put the queen-excluder over the second story to keep the queen out of the third story. When strong colonies are managed in this way the queen usually abandons the lower story soon after the second story is given, but carries on her work of filling the second story with apparently increased vigor.

After the queen has been above so long that most of the brood left in the lower story has emerged, she should be put down. This will usually be about three weeks after the second story was given if the queen went up promptly when the second story was given. To put the queen below, the Editor prefers setting off the second story and hunting out the queen, and she is then simply picked up and transferred to the lower story. Some good beekeepers prefer to shake the bees from the combs of the second story, to be sure that the queen is put below, instead of finding her.

Strange as it may seem, putting the queen back into the lower story and confining her there by means of the queen-excluder is a swarm-control measure of great importance, just as inviting her into the second story was a few weeks previously. At first thought one might expect that limiting the queen to a single story should increase the tendency to swarm. To have confined the queen to the lower story earlier in the season without having permitted her to go into the second story would result in swarming in many cases, but conditions now are quite different. The bees are now compelled to establish their brood-nest anew in the lower story, which at this time contains but a little brood. This brood is rapidly emerging, and the colony behaves much like a newly hived swarm. There is usually considerable pollen stored in the lower set of combs, which probably retards the work of the queen to some extent; but, where the honey flow is short, this is often an advantage. The conditions are as though an artificial swarm had been made, the swarm being in the lower story, below the supers and the parent colony above the supers, but all the bees are in the same hive.

Nine or ten days after the brood was put up and the queen put down, all queen-cells built in the top story not needed in nuclei may be destroyed and this former brood-chamber left on the hive as a super. It is not always necessary to destroy these queen-cells if this brood-chamber now on top is separated from the lower brood-chamber by at least two standard-depth supers. The emergence of young queens in the top story usually causes no trouble. By pushing one of the upper stories forward far enough to form an opening at the back the drones can escape from the hive, and a young queen may be permitted to go forth to mate through this opening. Unfortunately, this plan does not always prevent all swarming. Where the honey flow is long enough and especially in the North, some colonies managed as described above will prepare to swarm after the queen has again filled the brood-chamber to which she is now confined. Since at this time it is not feasible again to let her go into another set of empty combs added above as was done earlier, some beekeepers take away all the combs of brood or all but one, filling out the brood-chamber with empty combs or frames of foundation and again placing the removed combs of brood above the supers, thus compelling the bees again to establish a new brood-nest in the lower story, confining the queen there as before by means of the queen-excluder.

During ordinary seasons instead of doing this, any colonies that persist in building swarming cells, after having been given every chance to behave themselves, may as well have the queen killed and all queen-cells destroyed; then, after eight to ten days, a young laying queen may be introduced after again destroying all queen-cells. This settles swarming for the remainder of the season and possibly reduces the tendency to swarm the next year, provided the young queen given is reared from stock that is less inclined to swarm.

* * *

Shortage of Stores in Spring Still Takes Great Toll from American Beekeepers.

NO ONE has even been able to say with half enough emphasis how important it is to see that the bees are abundantly supplied with stores during the heavy brood-rearing period of spring. In spite of all that has been written on this subject and said at beekeepers' meetings, the lack of abundant stores during this critical time takes an annual toll from beekeepers in this country that would stagger the imagination if the figures could be known.

Reports coming to the Editor's desk from widely scattered regions indicate that colonies are already dangerously short of stores in certain regions, and in some cases many colonies have actually starved. A glance at the tabulated figures from producers on our market pages reveals this condition, since this month one column of these figures indicates the condition of the colonies as to the amount of stores.

Of course, no beekeeper worthy of the name will permit his bees to starve now; but merely to prevent starvation is by no means enough, for before starvation becomes imminent the colonies may be ruined, so far as being ready for the honey flow is concerned, by curtailing brood-rearing. Even extensive beekeepers too often make the serious mistake of permitting the stores to run too low for safety during the period of heaviest brood-rearing which, in the North, should take place this month.

The old way to carry the bees through the building-up period of spring was to feed them daily about a half pint of syrup, made of equal parts of sugar and water, to stimulate brood-rearing. Today we know that such a meager supply can not alone produce the kind of colonies needed to give good yields. For real safety at this time each colony should have not less than 10 to 15 pounds of stores in the combs every minute of the time that they are not securing from the fields sufficient nectar for their increasing daily needs. If the bees do not have this reserve of stores, it should be given immediately, even though the days are cold or rainy and the bees disagreeable to handle. If frames of honey are not at hand sugar syrup should be fed. It is not necessary in the North to feed a little each day to keep up brood-rearing at this season, but 10 or 20 pounds of syrup can be given at a single dose. The friction-top pails having perforations through the cover make splendid feeders for this purpose. The pail filled with warm syrup can be inverted over the escape hole in the bee-escape board used as an inner cover. The packing should be replaced snugly around the feeders. To perforate the covers of the friction-top pails, Harry Beaver of Troy, Pa., drives several small nails through a block of hard wood and then uses this block to punch several holes at a time. Usually, every pound of honey that is given to needy colonies during the six weeks just preceding the main honey flow, is returned by the bees tenfold or more in the increased yield if the locality is at all good.

One of the most dangerous practices is that of putting off from day to day the giving of more stores or the examination of the colonies, hoping each day that the next will be more suitable for handling the bees. Too often this results in waiting too long, the damage being done before the beekeeper realizes the seriousness of the situation.

Many who compel their bees to live from hand to mouth when they should be rearing brood most extensively are the very ones who complain most bitterly about the low price of honey and the high cost of production, failing to see that the simplest way to make these troubles vanish is to increase their yield per colony by giving the bees an abundance of stores when the workers for the harvest are being reared. In many cases the yield is more than doubled when this is done.

In the North it often happens that the period of greatest danger comes late in May, sometimes just before the main honey flow. Fortunately, colonies that are really strong enough in the spring to send a large force of bees to the field often gain in stores, while weaker colonies in the same apiary are starving, because the former are able to take advantage of every minute of favorable weather during the spring; but, of course, these splendid colonies are the ones that suffer the most if the stores finally run too low.

The beekeepers who give their bees a superabundance of stores the previous fall for both their winter and spring needs are usually the ones who are reaping the greatest rewards in honey. It seems to have taken some of us a long time to learn this.

BREEDING AND REQUEENING

Are Further Importations Necessary to Improve Our Stock? Shall We Requeen Each Year?

By M. C. Richter

OUR success is measured by the amount of brains that go into our business. Whatever we amount to as beekeepers is dependent upon the manner in which we apply our mental faculties to our work. As producers our chief aim is to get more and more honey, and one of our big problems is the improvement of stock. Others that engage in the live stock industry have benefited more through the application of the principles of scientific breeding than have we as beekeepers. The reason for this is quite apparent, for we have direct control over the female parent only. If we were only in the position where we could speak of drone-rearing as we do of queen-rearing, then, indeed, we would be able to make rapid strides. The most we can do at the present time is to assist nature in her methods of perpetuating the honeybee.

Selecting a Breeder.

In breeding better bees we always turn our efforts (1) to the *fixity of type* of the race of bees which we wish to better. In selection we must first of all purify the ancestry so that the inheritance thereof should become more and more similar as we proceed. Thus, in the selection of a queen it is necessary that she, and to a greater extent her offspring, conform to the type of the race of which she is a representative (the nearer she is to the upper limits of such, the better).

After fixity of type comes (2) *utility* or the honey-gathering powers of the offspring of the breeding queen. It is impossible for the queen-breeder to set a certain standard for the amount of honey stored. For instance one cannot place, say, 200 pounds of surplus honey as a requirement for a breeding colony on account of the variability of the seasons. We can make use of comparative results, however, and by means of careful selection from year to year choose from among the best surplus storers our breeding queens. In this manner advancement is brought about in standard yards by breeding from the very few exceptional colonies.

Prolificness, or (3) *fertility*, is the next selective point. It should be borne in mind that in selecting for utility the queen-breeder should not go against fertility, and also that a breeding queen may be inconspicuous as such, but may contribute much to her offspring.

The other main point is (4) *vigor*. Hardiness in bees means their power to resist adverse conditions such as severe winters and the like. There are two minor points in selection; the one, the non-swarming tendency and the other, that of quiet temperament. In comb-honey production white cappers and non-propolizers are selective factors. The pound-package man lays special stress upon fertility, and the queen-breeder selects cell-builders. If, perchance, you are in need of drawn comb and are clever, you will not, of course, give all your strong colonies so many frames of foundation to draw out; but on the contrary would soon find that, through selection, some 10% or 15% of your colonies are very fine wax-secreters (as much so as swarms), and that it would be more profitable to let such colonies at least start, if not complete, all your foundation into comb. In like manner, the most suitable colonies for comb-honey production may be selected. Bees kept for the purpose of pollination are selected for fertility and vigor and possible for tongue length.

Foreign Stock.

It must be seen from the above that material progress can be made in the breeding of bees through careful, painstaking selection over a period of years. We have experimented with most of the economic races of honeybees and, although these races have different characteristics which might fit into the environment of various beekeeping regions, in California at least, we have reason to favor the leather-colored Italian. In view of the fact that importations of queens into this country may bring about the introduction of the mite which causes the devastating Isle of Wight disease, the question has been advanced, "Would it not be better, for the present at least, to restrict the importation of queens into the United States?"

For three years the writer kept bees commercially in Chile. The Italian bee had been imported into that country 70 years before. Owing to the crude methods of beekeeping prevalent throughout the country, nature did her own selection. The hive (Fig. 1) of the country was small (13 x 13 x 6 inches). We bred from the best stock in Chile and bred also from the best stock we could import from the United States, and we must confess that we could see no difference in results between the two strains over a period of two years. The inhabitants of the hives in Figure 2 were the very bees that came from the Chilian type of hive ln Figure 1. From an equivalent of about six Langstroth frames of brood in the latter, most of the queens were able to maintain, when given a chance, 10 to 15 frames of brood in our standard hives. Owing to the above and to the fact that there were no brood diseases in Chile, a bill was put before the Chilian Congress to prohibit the introduction of bees into the country.

The fixity of type of the Italian race is established in this country. In an excellent article in the ''Bee World'' for November, 1921, Arthur M. Sturges states: ''After dealing with a considerable number, both of imported American queens and daughters of these, the evidence shows that they build up in the spring with greater rapidity than do the Italian strains from Italy direct.''

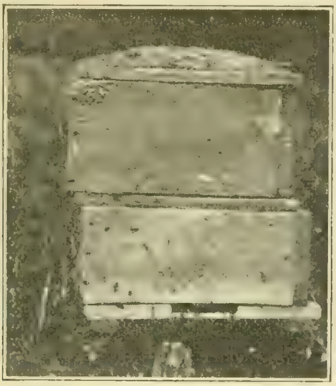


Fig. 1.—Chilian hives, 13 x 13 x 6 inches. The struggle for existence in such small hives tends to increase the vigor of the race.

It is the writer's opinion in view of the above and of what he has done along the lines of selection in South America and California that further importations are unnecessary at the present time.

Reasons for Requeening.

We requeen in order to maintain purity of race, replacing (1) mismated queens. The writer cannot see the wisdom of this practice in commercial honey production. Through actual experimental work completed at the University of California over a period of two years and conducted among several hundred colonies, it was found that the progeny of an Italian queen mated to a black drone always stored more honey than either the pure Italian or black race. Since that time we have found the same to hold true in our yards. In fact we are pleased when our Italians mismate—pleased at the big crops and are now quite callous to the few extra stings that have been thrown in.

Another common cause for requeening is (2) inferiority—the colony was not up to the average. Better to do the dequeening when scattered brood is first noticed, even if the queen be only two or three months old, than to wait till the season is over before discovering her uselessness. The big question in requeening, however, associates itself with (3) failing queens. The orthodox way is to requeen every year. At all events this subject permits of discussion, as the large majority of California beekeepers do not requeen every year. The longevity of the queen is dependent upon her inherent qualities and upon the amount of work which she performs. In tropical and semi-tropical countries queens wear out fast. Parts of California are semi-tropical and many of our regions have periods of long brood-rearing. In the great valleys of the state there is active brood-rearing for nine to ten months of the year. In other parts of the state there is but half this amount of brood-rearing. Where there are long seasons and when migratory beekeeping is engaged in, it pays to requeen every year. Requeening is unquestionably better than waiting for supersedure. But when the season is short and fast with only one main flow during spring, how about it? Let it be understood that the queen must reach her peak at the proper time and that she must be responsible for her quota of young bees reared during September or October. Supposing a queen is raised just after the peak has been reached this year, will she be able to produce in May, 1924, her 75,000 or 100,000 workers? For several years we thought our queens would do it—many of them will. We have found that the extra cost of annual

Fig. 2.—Stock taken from small hives like those in Fig. 1. Hundreds of colonies to work with are a great help in studying the principles of breeding.

requeening is more than taken care of in an increase of the crop. One drawback is that we are never sure that the replaced queen is going to be as good as the one removed —often she is not. It pays, however, under all conditions to requeen every year. And it pays likewise to requeen with Italian stock colonies affected with European foul brood. Requeening is in order for severe cases of sacbrood and for the so-called paralysis.

Requeening Time.

Aside from requeening for mismated and inferior queens, and on account of diseases, which practice may occur at any time during the year, we hear the question, ''What is the best time for the commercial beekeeper to do his general requeening?'' The factors under consideration are to prepare colonies for the (1) main flow, (2) one or more secondary flows, (3) winter, or to requeen at a (4) time when the beekeepers can spare their precious moments to the best advantage. There is another consideration, however, that outweighs the above factors. Requeening is not synonymous with queen-rearing. The best time to raise queens is during spring brood-rearing. Optimum conditions prevail at that time. Springtime is the natural breeding season, and the finest specimens of males and females are developed under their most favorable environment.

Simplest Requeening Method.

We requeen our colonies as the main flow tapers off in June. It is useless to take up valuable space in a description thereof, for our method was partly described in the current February issue, and is much more fully and efficiently handled in an editorial in ''Gleanings'' for May, 1921. One word though; we certainly do like queens raised naturally in their own homes, and nobody appreciates more than we do, the great saving of time which this method makes possible.

European mating nuclei—a method of conserving warmth. This so-called nucleus house is built for 12 nuclei.

Queens perform best when reared in normal colonies in spring. Avoid the queenless impulse and leave the bees alone when the honey plants are on a strike.

Big Sur, Calif.

BROOD DISEASE VARIATIONS

Explanation for Some of the Confusing Symptoms in the Gross Diagnosis of Bee Diseases

By A. P. Sturtevant

THE diagnosis of the brood diseases of bees, particularly without the aid of the microscope, cannot be carried out by the use of any definite rule. If the symptoms never varied from those typical ones pictured and described so often in the various papers on bee diseases, then some of the sources of confusion to the average beekeeper in diagnosing brood diseases could be eliminated to a large extent. Unfortunately, with the varying conditions under which the brood diseases are found present or thriving, the symptoms differ accordingly. These variations, when encountered, may lead the beekeeper to erroneous conclusions and consequent losses unless he gives the matter careful study.

It is not the purpose of this paper to take up the entire subject of a comparative study of all the symptoms of the brood diseases of bees. This has been covered more or less completely in various bulletins of the Department of Agriculture and elsewhere. No further references to specific literature will be made. There are, however, a few confusing variations, often misunderstood or unrecognized by the average beekeeper. A more complete description may prevent mistakes being made in gross diagnosis.

There are many external influences affecting the progress of the diseases which may have more or less direct bearing on these variations in symptoms. The actual changes in appearance of the diseased larvae are caused by certain bacteria. Since some of these confusing conditions are easily explained by the action of the bacteria associated with the disease in question, only this side of the subject will be considered at this time.

The Nature of Bacteria and Some of Their Functions.

A short digression is here necessary in order to understand the nature of these bacteria which cause so much confusion. Bacteria are extremely small micro-organisms, the smallest members of the plant kingdom. They are simple, single-celled plants which grow and increase in numbers by continually dividing in two. This often takes place rapidly under proper conditions of food supply and temperature. Certain pathogenic or disease-producing bacteria are known to be the cause of various diseases of plants and animals. These attack only living tissues, as a rule. Others known as putrefactive or decomposing organisms have only the power of decomposing plant or animal tissues after death has occurred, acting like scavengers, breaking down and destroying the dead tissues.

Some bacteria have the power of forming what are known as spores. These are formed when conditions develop unfavorable for growth, the purpose being to carry the organism thru this unfavorable period until it can find again the proper growth conditions. The spores have thick walls which enable them to resist long drying or high temperatures and to pass thru long periods without food. When spores at any time are placed where food and other conditions are again favorable for growth, they germinate and become active once more, in something the same way that seeds sprout on planting.

There is another type of bacteria which never forms resting-stage spores. They always occur only in what is known as the vegetative or actively growing stage. These are like already growing plants that may be transplanted to another spot. When conditions become unfavorable for the growth of non-sporeforming bacteria they gradually die off. In the case of bee diseases we have to deal with all these various types of bacteria.

The Cause of European Foul Brood.

European foul brood will be considered first, since it responds more freely to external influences affecting the disease. It is also the worst offender regarding variations in symptoms. The appearance of the symptoms varies to such an extent at times as to cause confusion while, as will be seen later, American foul brood is much more constant in the manifestation of its symptoms. The explanation lies in the fact that in the case of Europeon foul brood there are associated with the bacteria causing the disease several varying types of organisms, while in American foul brood there is but one organism active, as will be described later.

As is well known a specific organism, *Bacillus pluton*, is the cause of European foul brood. The organism is presumably fed to the young coiled larvae in their food, primarily from some outside source. It at once starts to grow in the larval intestine, increasing quite rapidly in numbers. This rapid start or short incubation period is possible because *Bacillus pluton* is always in its active growing or vegetative stage. It does not form spores, and consequently is ready to attack at once without the lapse of time necessary for spore germination. As the disease develops and the bacteria causing the disease increase in numbers, they give off toxins which are absorbed by the larva and eventually cause its death.

Relation of Secondary Invaders to Confusing Symptoms.

There are found associated with *Bacillus pluton* other varying organisms known as secondary invaders. They never cause the death of the larva, which distinguishes them from the primary pathogenic organism. They are either present in small numbers or get into the larva soon after death and start to develop in the dead larva. In the early stages of the disease both in the larva and even in the colony as a whole, the secondary invaders generally have little effect on the appearance of the symptoms. Most of these do not have the power of decomposing animal tissues to any extent. *Bacillus pluton*, with other not actively putrefactive organisms, predominates in numbers and until after the death of the larva occurs is found only inside the larval intestine. When external conditions are such that the disease is allowed to run unchecked for some time, then other secondary invaders developing more rapidly come into prominence, and organisms with purely putrefactive or decomposing functions begin to invade the entire body tissues of the larva. Therefore it has been found that, as the secondary invaders vary in character and prominence, so the symptoms vary from the characteristic appearances.

Relation of Bacillus Alvei to Abnormal Appearances.

The most active and pernicious of the comparatively large numbers of secondary invaders in European foul brood is *Bacillus alvei*. In the early days of the study of the bacteriology of bee diseases it was thought to be a pathogenic organism, as it was so often found present in large numbers in the dead larvae. This has since been proven not to be the case, for it is now known that *Bacillus alvei* does not cause the death of larvae. *Bacillus alvei* belongs to the group of spore-forming bacteria, and practically its only function, connected with European foul brood carried out under the proper conditions for its activity, is to decompose the dead remains. As a result of this putrefactive activity when present, changes in the appearance of the remains occur to such an extent as often to lead to much confusion. This condition occurs most abundantly where European foul brood is allowed to run unchecked for some time and particularly in regions where the disease is always bad.

In such cases as mentioned above it is noticed that more and more of the larvae seem to be affected shortly after being sealed, at the time when they are still changing position in the cells from coiled to extended. Death generally occurs while they are still moving about in the cells, which accounts for the irregular positions of the dead larvae in these cases. Large numbers of the vegetative rods and spores of *Bacillus alvei* are found in larvae dying at this age. Under these conditions the irregular positions, shapes and colors of the dead larvae all vary more or less from the characteristic features of the dead coiled larvae in typical European foul brood (Fig. 1). They have a dark-brown color and a granular, lumpy, stringiness or old, dried rubber consistency. These cause the confusion sometimes experienced by beekeepers in differentiating between the diseases.

Furthermore, there is a characteristic odor associated with this condition which is caused by the putrefactive activities of *Bacillus alvei.* The odor is never found associated with any other condition or brood-disease organism. It has been described as similar to that of putrid, decaying meat. It is markedly different from the typical American foul brood and is much more disagreeably persistent. The activity of *Bacillus alvei* also, without doubt, causes the rather granular, lumpy, stringy consistency sometimes encountered and mistaken for the typical glue-like roping of American foul brood. The dried-down scale from this type of dead larva in European foul brood is easily removed from the cell walls (Fig. 1 n). The brittle American foul brood scale adheres tenaciously to the lower side wall in practically all cases (Fig. 2). This latter feature of American foul brood is a result of the glue-like consistency of the decomposition products from the action of *Bacillus larvae* on the tissues of the larva.

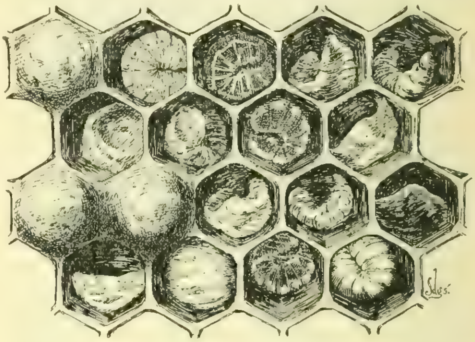
The occasional similarity between European foul brood and American foul brood when *Bacillus alvei* is abundant can be explained by the fact that the non-pathogenic *Bacillus alvei* and the pathogenic *Bacillus larvae,* the cause of American foul brood, are "cousins." They belong to the same general family of bacteria, and therefore have somewhat similar characteristics of action regarding putrefactive functions. The two organisms are quite different, however, in that *Bacillus alvei* has putrefactive functions alone while *Bacillus larvae* combines the power of primarily producing disease with the ability to decompose the remains.

The important fact in the above discussion is, as will be seen later, that the primary activities of *Bacillus pluton* do not prevent the growth of secondary invading organisms which cause most of the variations and so-called abnormalities in the symptoms of European foul brood.

Uniform Symptoms in American Foul Brood.

It may be well to turn now to American foul brood for comparison. Fortunately the problem in this disease is much more simple. The symptoms in American foul brood nearly always are found to be uniform in character. Every diseased cell contains a dead larva or scale, all having practically the same appearance as to consistency, color and position in the cell. This is true even under varied external conditions (Fig. 2).

The reason for the uniformity of symptoms in this disease, in comparison with the great variations sometimes found in European foul brood, is explained by the fact that in American foul brood there is found practically never another micro-organism associated with the disease. This is *Bacillus larvae,* the cause of the disease. This pathogenic, spore-forming organism not only kills the larva but carries out the decomposition of the remains. Furthermore, and this is an important factor in the reasoning, the products of growth and decomposition apparently prevent the growth of any other organisms. This condition causes the vegetative rods soon to form the resistant resting-stage spores. There are no secondary invaders in American foul brood, and what few variations are seen are due to differences in the age of the larva at the time of death.



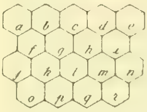


Fig. 1.—European foul brood. a, j, k, normal sealed cells; r, normal coiled larva at age at which a majority are attacked by the disease; b, p, first indications of disease, uneasy movements, a light discoloration and prominence of the tracheae, or turning in cell with back out showing grayish yellow line of intestine; f h, m, q, various stages of disease in coiled larvae, moist, melting, cream-colored, to partly dried cheesy, light-brown coffee color; c, characteristic yellow.brown, coiled scale showing tracheae; d, e, g, i, l, o, irregularly coiled and partially extended larvae, darker-brown, moist, cheesy with sometimes a tendency to coarse, lumpy, stringing accompanied often by a strong, putrid, decaying-meat odor; n, partially dried-down scale irregularly extended on lower side wall or along the side walls in a corkscrew-like position. These are darker-gray brown, rarely adhere to the cell walls to any extent, having the consistency of old rotten rubber and always the putrid decaying-meat odor. These are often found under perforated or discolored cappings, not shown here.

Reason for Delayed Death in American Foul Brood.

Bacillus larvae gains entrance to the larva generally in the spore stage, in the larval food. This occurs at about the same stage as in European foul brood, while the larva is still coiled in the cell. Only rarely, however, do coiled larvae die. This is apparently because it takes some time for the resting-stage spores to germinate into the active vegetative rods. This causes death, as a rule, to occur later in the life history of the larva. Therefore the diseased larva is found almost always to have been sealed over before death occurred, having finished spinning its cocoon and taken the flat extended position preparatory to pupation.

In bad or virulent cases, however, it has been noted that occasionally some coiled larvae do die before extending in the cells. These often have somewhat the appearance of typical coiled European foul brood larvae. The reason for this is that these coiled larvae incidentally have been fed some active vegetative rods instead of the slowly germinating spores. Therefore, the rods are able to start activities at once and thereby cause the death of the larva much sooner. Under the microscope the diseased coiled larvae always show considerable numbers of the vegetative rod forms and few if any of the spores.

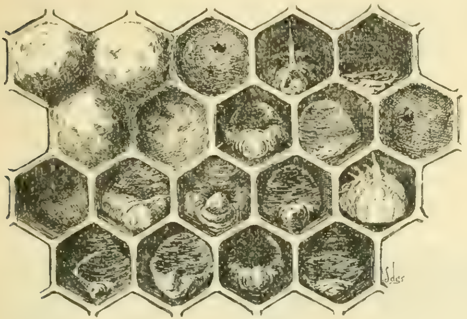


Fig. 2.—American foul brood. a, b, f, normal sealed cells; c, j sunken cappings showing perforations; g, sunken capping not perforated, often showing glistening brown surface of cocoon pressed inwards by capping; h, l, m, n, q r, larvae affected by the disease in various stages of decomposition and drying down. Note that all lie uniformly extended in practically the same position along lower side wall of cell; e, i, p, s, gummy or brittle scales formed from dried-down larvae; the anterior end may be broken off occasionally and removed, but posterior end curved up into the bottom of the cell remains glued fast; o, pupa showing form of adult bee affected by the disease, in first stages of decomposition; d, dried-down pupa with tongue extended, remaining attached to top wall of the cell like a fine thread.

The last-described manifestation is about the only confusing variation in the symptoms of American foul brood which might be misleading to the beekeeper. The coiled position and yellowish-brown color might suggest European foul brood, but upon closer examination the consistency is found to be quite different. It is slimy, with a tendency to rope like the typical American foul brood larva, instead of having the characteristic moist, melting, cheesy consistency of coiled European foul brood. This variation is a more or less rare occurrence and should cause no trouble in the gross diagnosis of American foul brood, since the combs will be well filled with the typical forms of the disease.

A Never Failing Positive Symptom of American Foul Brood.

There is one symptom in American foul brood upon which a positive gross diagnosis can be made when it is found. Occasionally the action of *Bacillus larvae* in some of the infected larvae is for some reason slower than in the others, and, as a result, some reach the pupal stage before death. They may have started even to take the form of the adult bee (Fig. 2, o). This does not occur in large numbers but may be recognized by the fine, thread-like tongue of the pupa which was extended at time of death. It usually remains fastened to the upper side wall, slanting slightly inward from the head of the pupa (Fig. 2, d). This symptom when found should aid the beekeeper greatly in diagnosis of American foul brood.

Both Diseases in the Same Colony.

This brings the discussion down to occasional cases of so-called mixed infection, where both diseases are found in the same colony. These have a more reasonable basis for causing confusion and come more nearly requiring a bacteriological examination. Here, however, the colony as a whole must be taken as a unit instead of the individual larva. As far as is authentically known, the organism causing European foul brood, *Bacillus pluton*, has never been found in the same larva with *Bacillus larvae*, the cause of American foul brood. Individual larvae may be found in the same colony affected either by European foul brood and contain *Bacillus pluton* with associated secondary invaders, or affected by American foul brood with *Bacillus larvae* alone. Neither one of these organisms is found as a secondary invader to the other. The proof of this lies in the fact that *Bacillus larvae* prevents the growth of any other organisms after it has once invaded the larva. *Bacillus pluton* would be unable to develop as a secondary invader because of unfavorable growth conditions produced by *Bacillus larvae*. If by any chance *Bacillus larvae* were able to develop as a secondary invader to *Bacillus pluton*, which is not probable, *Bacillus larvae* because of its vigorous growth and putrefactive functions in the larva would destroy *Bacillus pluton* before much chance of its being detected even under the microscope. In the 50 or 60 samples of mixed infection found among several thousand samples of brood diseases examined by the writer, there has never been found any indication of the presence of both organisms in the same larva.

Conclusions.

The lesson to be drawn from this rather hasty discussion of the problem of the difficulties of accurate gross diagnosis of the brood diseases of bees, is one which every beekeeper can take unto himself to a great extent. Sufficient time should be taken to study carefully all the symptoms and not make a snap judgment on some one apparent outstanding feature which may prove to be inconclusive. The man in the apiary has a big advantage over the laboratory observer as far as gross symptoms are concerned, in that the former has entire colonies in which to make observations while the laboratory worker generally has but a few square inches of comb to study, often not in the best of condition. This necessity for making a minute search for details in the laboratory, such as described above, has strongly emphasized the benefit to be derived from a careful study of all the symptoms present. One should not jump at ill-advised conclusions from insufficient observations but should carefully weigh all points before making a decision. It will be found that this will save both time and money.

Washington, D. C.

THE EXTRACTING EQUIPMENT

Arrangement of Apparatus and Methods for Speed in Uncapping, Extracting, Straining and Disposal of Cappings

By H. H. Root

IN and around Medina we have about 1700 colonies of bees scattered along good roads, the apiaries averaging 75 colonies each. Some of the yards are run for queens, and some for bees, but more and more we are running for extracted honey. This locality is not at all adapted for the production of comb honey; in fact, Medina County has never been considered a good locality for honey of any kind. Last year we had between 14,000 and 15,000 frames of foundation drawn out. We extracted a carload of honey, and saved for spring two or three full combs of sealed honey per colony. Next year, if the season is favorable, we expect to do much better—two cars, perhaps.

I doubt whether Medina County will ever produce finer honey than our 1921 crop. Probably due to the extra amount of hot weather all our honey was heavy, tested with the hydrometer, 42.5 degrees Baume, and rivaling the far-famed thick honey of the dry Rocky Mountain district. Extracting, pumping and straining are all more difficult when the honey is thick, but give me the thick honey!

In my last article I described some of the honey-houses of the Northwest. I now propose to say something about the various parts of the equipment used for extracted honey. In extracting just one carload of honey something can be learned, especially when one is in touch with ideas submitted and used by hundreds of good beekeepers and is willing to try every idea at least once. I believe I could write a small book on plans of our own and of others that we have tried—plans that did not prove practical. Such a tale might be interesting, but would not be worth very much.

The Extractor.

We use an eight frame Buckeye extractor permitting the reversing of the combs under full motion, once, twice or any number of times. This outfit has been previously described on these pages, hence no detailed description is necessary, aside from that given in the illustrations. Fig. 1 shows the arrangement of the equipment that we prefer.

In the background are the supers of full combs next to the uncapping table. The empty supers are stored in the foreground next to the door.

For power, we use a slow-speed one-horsepower electric motor. In the course of a year we receive many inquiries as to the size of motor required to run an extractor. A one-horsepower, if of a good reliable make, capable of handling a certain overload, is usually large enough, especially if the operator is willing to give the reel a push by hand as it is started. If the honey is thick and it becomes necessary to elevate it as much as 10 feet, I advise a larger motor, as the extra cost at the start is not great and the current used by a larger motor running light is frequently but little greater than that used by a small motor working to capacity. A two-horsepower motor is ample for any emergency.

Warming the Honey.

Our honey was so thick last year that it seemed advisable to raise the temperature somewhat to facilitate the straining. We did not care to get it hot; therefore following a plan suggested by R. A. Bray of Big Timber, Mont., as shown in these various illustrations, we merely surrounded the vertical pipe from the pump with a larger pipe, making a water jacket into which we introduced steam. It depends upon the flow of honey from the pump through this inside pipe as to the temperature secured, but on the average we were able to raise the temperature of the honey 10 degrees, which was all we wanted. For shipment in 60-lb. cans it is not a good plan to heat the honey to 150 or 160 degrees, as this delays granulation, and granulated honey ships more safely than liquid honey. When packing in smaller cans for local market, heating to 160 degrees is advisable, for the purpose of delaying granulation. The steam-jacketed honey-pipe is not the best arrangement we have heard of for all purposes; but it is very satisfactory for raising the temperature slightly, and it is simple and easily installed. Of course, it is necessary to use extreme care in making all the pipes join tight.

Otherwise, considerable condensed steam is likely to be added to the honey—unintentional "watered stock."

Mr. Bray goes further in his own extracting apparatus. He punches a small hole in the side of the extractor under the bottom, and introduces through this hole a very small steam pipe. Opening the valve slightly permits steam to circulate under the bottom of the extractor and to escape around the outside. This plan heats the bottom of the extractor and assists very materially in warming the honey. It discolors the enamel on the extractor, but that seems to be the only disadvantage.

Straining.

While we have tried a good many different forms of settling tanks having partitions, etc., we prefer the plan shown in Fig. 2. A long soft bag of cheesecloth the full depth of the tank is tacked to four sticks, as shown, and the honey is pumped inside. No honey is drawn off until the tank is full, and then only fast enough to keep the tank from running over. No especial sizes are important. The bag should merely be as large as the tank will permit, leaving two or three inches for clear honey outside. This plan is really an arrangement for settling rather than straining, for most of the particles of wax float to the top so that, after all, the cheesecloth does not have a great deal of straining to do. A bag two feet square and about four feet deep will ordinarily take care of 10,000 pounds of honey without cleaning. Frequently it will not have to be changed until a much greater amount has passed through. If the honey is exceedingly thick, it may have to be changed in a shorter time. When the accumulation of bits of cappings and other foreign material piles up inside the bag to a level much higher than the clear honey outside, a change is necessary. The honey is then drawn off from the tank and the bag lifted over a tub to drain. This is not a particularly easy manipulation; therefore, next year we expect to use a cylindrical basket, a few inches smaller in diameter than the honey tank, made of coarse screen with a stout band of steel around the top. This will support the cheesecloth bag inside and facilitate lifting over another can to drain when it is necessary to make a change. We

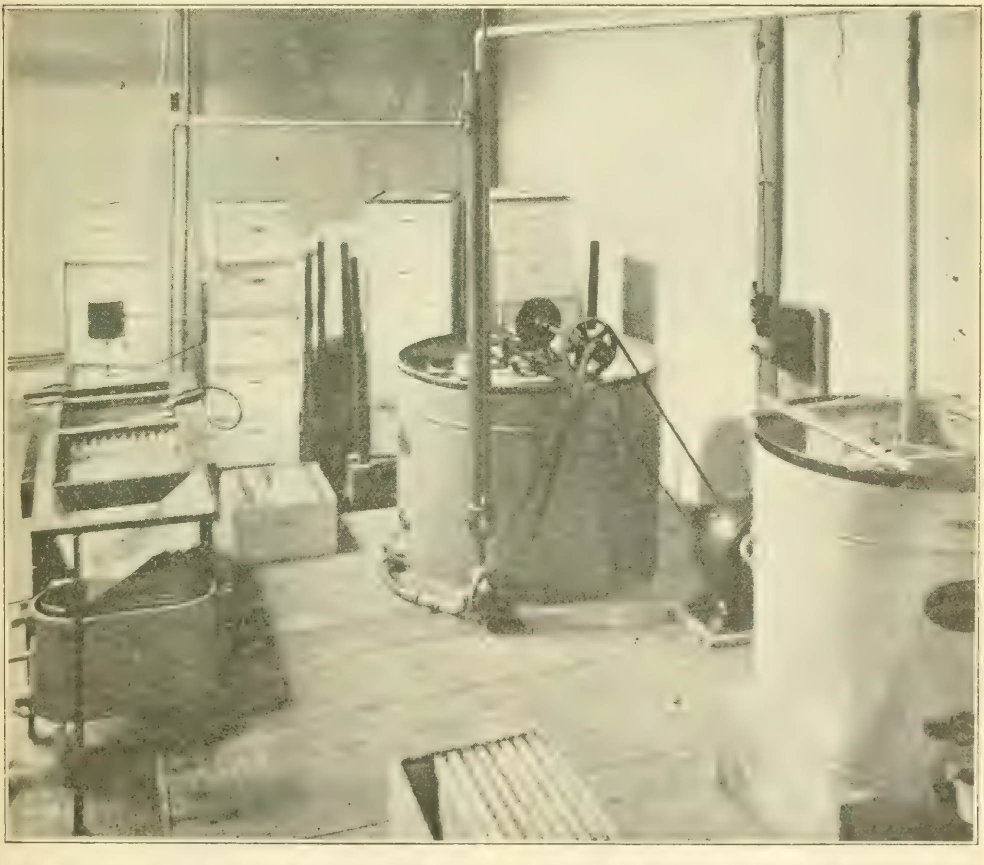


Fig. 1.—General view of the extracting room as used at Medina in 1921. The extractor was driven by a 1-horsepower motor. Steam was used to warm the honey from the pump to facilitate straining. Steam was also used instead of a stove for heating the water in the capping-melter.

shall use two of these screen baskets for the cheesecloth strainer, one to be draining while the other is in use. When a second bag is in place in the tank the work may be resumed without further delay.

This plan is no better than depending on settling tanks alone; but it is usually much cheaper, and ordinarily but one tank is needed. To be sure, the one tank when full has to be kept from running over, so canning is immediately necessary. With a number of large tanks the canning may be postponed, if desired.

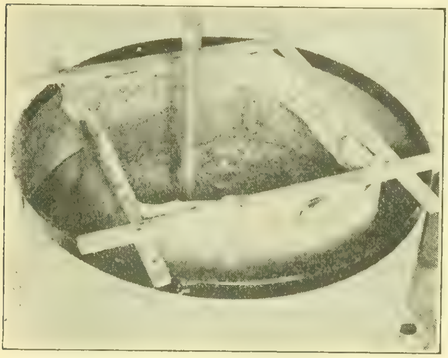


Fig. 2.—Cheesecloth bag that strained 10,000 lbs. of honey before it had to be cleaned. The particles of cappings and other foreign material float to the surface so that the strainer really has little to do.

The Disposal of the Cappings.

B. J. Kleinhesselink of Hardin, Mont., has suggested a very practical improvement on the capping-melter. It is simple, but sometimes the simplest ideas are the most valuable. The bottom of the melter, instead of being flat, has V-shaped corrugations (Fig. 3). The melting surface is thereby greatly increased; but what is more important, the ridges assist greatly in the quick melting of the cappings, leaving cleared spaces underneath the wax for the honey to run away quickly. There is nothing to clog up, even if old brood-combs are being uncapped so that there is considerable fibrous material in the wax. In my opinion, the capacity of such a melter is about 50% greater than one of the same size but having a flat bottom, and, what is more important, the honey is less likely to be injured.

Most of the time we had two uncappers at work with steam knives. The capping-melter with two operating is crowded, or else there is practically no room for the storage of uncapped combs. It is easy, however, to build a rack on one end of the table having a tin trough underneath to catch the dripping honey from the uncapped combs. This allows the entire length of the melter for the two operators (Fig. 3).

Unless steam is available, it is not pleasant to stand over a two or three burner gasoline stove in a room already too warm for comfort. Therefore, personally I have never been over-enthusiastic over capping-melters. Moreover, the honey is frequently injured somewhat, both in flavor and in color. I do not believe the capping-melter exists that does not have at least a slight effect on the honey. In extreme instances the color is changed so greatly that a difference can be noticed 50 feet away when a jar of honey from the melter is compared in a good light with the same-sized jar containing honey direct from the extractor. I shall give some statistics in a later article as to the proportion of honey in the cappings compared with that extracted, but 15% is probably a minimum and 30% to 35% a maximum of the total amount of honey that is cut off with the cappings. With care a capping-melter need not darken the honey greatly, and if this honey is mixed with the honey that is extracted the effect is not very noticeable. I have always felt it a mistake to pour honey badly discolored from a capping-melter in with good honey. With a capping-melter having a corrugated bottom, I am satisfied that the honey, if the melter is carefully handled, need not be greatly injured.

In any building having steam it is advisable to avoid the use of separate stoves by

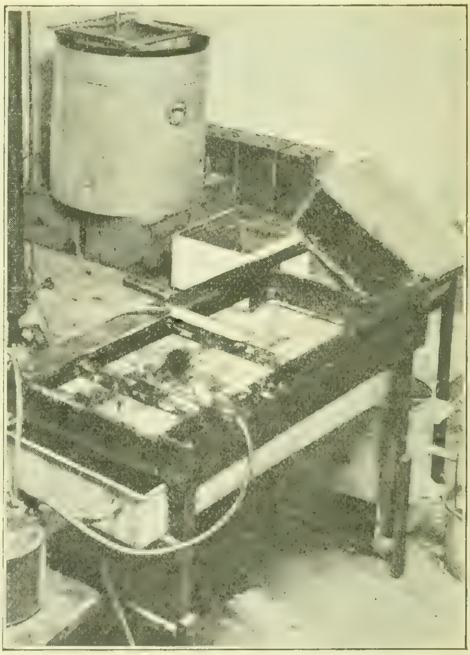


Fig. 3.—Capping melter in which the hot water is heated by steam. The steam enters at the lowest end of the melter and the water overflows at the highest end. The extracting was done so far from the power house that the steam contained a great deal of water. To get dry steam for the uncapping-knives we had to use a copper boiler over a stove. We have experimented with four or five different electrically heated knives, but have always returned to the steam knive, as there is no difficulty in maintaining a uniform temperature with a steam-heated blade. The rack built beyond the end of the melter furnishes storage space for uncapped combs and gives two operators plenty of room for uncapping.

running the steam into the water at the lower end of the melter, allowing the excess of hot water to overflow through a pipe near the top of the upper end of the melter. I prefer hot water rather than steam, as the water is not likely to reach quite as high a temperature as though the bottom of the melter were heated directly with steam. Therefore, there is less danger of discoloration of the honey.

R. F. Holtermann of Brantford, Ont., Can., after experience with more than one type of capping-melter, has abandoned melting the cappings as they slide from the combs. He uses a large press and forces the greater part of the honey out of the cappings; then he melts the dry cappings, practically free from honey, later on at the end of the season. Draining alone does not permit enough of the honey to escape, especially in a locality where the honey is thick. E. F. Atwater of Meridian, Idaho, after making careful record one year of the amount of honey he secured when he melted up his entire batch of cappings and comparing this amount with his total crop, reports that four per cent of the total crop is left in the cappings even when the most improved methods of draining are followed. In a locality where the honey is much thinner, this percentage would be greatly reduced. Mr. Atwater recommends warming the cappings and honey, and then having some means for separating the two. H. M. West of Parma, Idaho, uses a combination of warming, draining and pressing. He finds the pressing of cold cappings very slow work on account of the thickness of most of the Inter-mountain honey. Fig. 4 shows Mr. West's melter (or, rather, warmer, for he does not melt the cappings) and his press. The right-hand end of the "warmer" is elevated so much that the cappings slide down rapidly without melting. The temperature of the honey can be controlled by the pitch of this "slide." Without warming he used to fill one of the perforated cylinders in half a day. By warming the honey and cappings it takes all day to fill one cylinder under the press, and most of the warmed honey has drained out before pressure is applied. The screw is then turned down hard in the evening and pressure left on all night. This plan requires considerable equipment, but it does not darken the honey. It is really a combination of three plans.

Steam Uncapping-knife.

Several have suggested another tube for the steam-heated knife so that the water of condensation may be carried away from the honey. This seems to me an unnecessary complication. The knife would not only be more expensive, but the free movement of the blade would be interfered with by reason of the double tubing. And, why the complication? Only a fraction of the water finds its way into the honey, most of the moisture being absorbed by the air in the room. However, if a small boiler were used to furnish steam and all the water in that boiler were poured into the honey and cappings during the time that amount of water in the boiler would have furnished steam for uncapping, I do not believe the honey would be thinned enough to be noticeable even when testing with a hydrometer; and it must be remembered, as pointed out before, that only a very small part of the water in this boiler actually finds its way into the honey.

We have tested several different forms of electrically heated uncapping-knifes, but we have never yet succeeded in getting an element that will remain hot when submerged in cold honey and still not almost instantly overheat and even burn out after the blade passes through the comb, especially if there is a momentary delay while one is reaching for another comb. In case of a steam knife there is no difficulty in keeping the temperature always uniform.

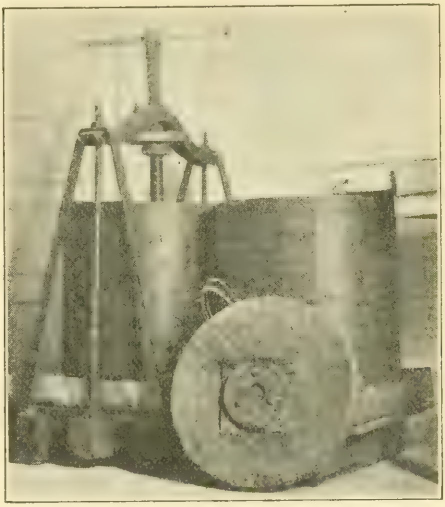


Fig. 4.—H. M. West of Parma, Idaho, tried pressing the honey out of cold cappings, but with the thick, western honey it is a very slow process. Mr. West elevates one end of his capping "warmer" so that the cappings slide over into the press unmelted. The honey, however, is heated enough so that it presses out easily.

The Honey-pump.

The question has often been asked whether the honey-pump does not introduce air into the honey. Yes, under some circumstances, it does, but most of the air is introduced in the extractor. When the honey is quite thick a strong light reveals honey flying to the side of the can in streams so fine that it resembles a mist. The thicker the honey, the more the air is mixed with it. For this reason it is advisable to extract combs that are warm. If the weather is not hot at the time the extracting is done, the extracting room should be made hot by the use of stoves, for the thinner the honey, in my opinion, the less the air is introduced in the process of extracting. The pump should not run any faster than necessary to keep the extractor empty.

FROM THE FIELD OF EXPERIENCE

EUROPEAN FOUL BROOD

Two Difficulties Encountered in Cleaning up This Disease and How One Was Solved

For three years I have battled with European foul brood in my West Virginia apiary and have encountered every form and phase of this deadly disease. During these years I have given the subject much study and have learned more than I ever expected to know. I have been fighting the disease against fearful odds, as I can not get to my apiary until the last week in May, and any one familiar with the disease knows what frightful ravages can be wrought during the months of April and May, even in this latitude, if the season is propitious for brood-rearing.

I have reached the definite conclusion that the beekeeper may as well make up his mind to fight this disease year after year, if it ever gets a foothold in his neighborhood, because, although we can secure perfect co-operation of all the beekeepers and eradicate it in our apiaries, there will remain a continual source of re-infection from the bee-trees in the vicinity. So I for one have joined battle to the bitter end. I am not discouraged at the prospect, because I have learned how to clean up the disease in my apiary. (When I left in September I was convinced after the closest inspection of all my colonies, that I did not have a single diseased larva.) I am also encouraged, because I know that the native black bee, which is of questionable value, is doomed. As the bee-trees become inhabited with pure Italians, the chance of infection will be much less. Furthermore, I am encouraged, because the jack-leg beekeepers, who store their bees in boxes and "bee-gums," will soon drop out.

I shall not discuss all phases of the subject, but shall turn to the two real problems.

In my experience I have never succeeded in cleaning up the disease by removing the queen for a period shorter than 27 days. I have requeened with the very best Italian queens I could buy and in every colony into which I have introduced them on the tenth, the fifteenth and the twentieth day, I have found an outbreak of the disease within two weeks. I feel sure that the infection came from inside the colony, for in the same yard, where there might be cases of robbing in hives that are weakened from disease, I have not yet had a single case of re-infection during the same season, in colonies that had been kept queenless for 27 days. I do not dispute the experience of others in this matter, but I am simply giving the facts from my own experience.

Allow me to make a statement for the benefit of those beekeepers who have not had experience with this disease. It is essential that three things be done, if the fight is to be won. First, the very day you detect the disease, remove the queen. Second, do not try to clean up a weak colony. Put two weak ones into one hive and destroy any frames having brood that you can not get into this one hive. I have found that frames of honey taken from a diseased hive will not transmit the germs to a healthy hive, though I do not advise transferring such frames to healthy hives. Third, never allow any colony in your yard to become weak, for you may have overlooked diseased larvae at your last inspection and robbers from the healthy hives will spread the disease all through your apiary. This is most important.

Now we are ready for the gravest difficulties I have encountered.

It has been my experience that any colony that is forced to stay queenless for a long period will become very slack on honey-carrying, but very strong on pollen-carrying. And their combs soon become pollen-bound. In my beekeeping experience I know nothing that so demoralizes me as this. I do not know any practical plan of overcoming it. I have tried placing these pollen-bound frames, two at a time, in a hive-body over a new swarm that has been hived in a brood-chamber with only two frames of drawn-out comb, the rest being only foundation, or over a colony obtained by dividing. This has occasionally resulted in cleaning up the pollen-bound frames, but I can not call it a success at all commensurate with the trouble involved. I am not ready to offer a solution for this difficulty. Will some other beekeeper tell us how to meet it?

The more serious difficulty, however, has in a fashion been overcome. This difficulty is the development of laying-workers in the colony that has been kept queenless so long. Any one who has ever had those crazy old maids to deal with, when they once get the taste of having children, knows something of the seriousness of this difficulty.

I find that about three out of five colonies that have been kept queenless for 27 days will develop laying-workers.

Here is my plan for preventing it: Remove the queen on the first day; cut out queen-cells on the ninth day; introduce a capped queen-cell in a protector on the tenth day; the queen emerges about the fourteenth day and the queen is mated on about the nineteenth day. Cage the queen on the twentieth day; introduce the new Italian queen in a cage on the twenty-fifth day, and release her on the twenty-seventh day.

Not once has this plan failed to stop laying-workers. H. B. Arbuckle.

Davidson, N. C.

FROM THE FIELD OF EXPERIENCE

NORTHERN CALIFORNIA

Vast Expanse of Virgin Beekeeping Territory in the Great Star Thistle Region

When one exists but is not on the map, how does he proceed to put himself on the map? Or, more properly speaking, when one is on the map and everyone, including the map, is unaware of the fact, what then?

Chico, Butte County, Calif., is in that fantastic predicament. Bee journals and writers generally appear to have formed a soviet to locate northern California between Sacramento County and the Tehachapi, a range of mountains crossing the state from east to west, fully 300 miles south of its geographical center. Everything below the Tehachapi is southern California, and the restricted territory above the Tehachapi, by the same token, northern California.

Before our government acquired this state there were two Californias, Alta and Baja, upper and lower, the dividing line being along the southern boundary of San Diego County, about where it is today. Later, when a sleepy little Mexican village vaguely known as Los Angeles, assumed municipal proportions, she staked out the country between Baja California and the Tehachapi into city lots, virtually seceded from the state and named her pre-emption, southern California.

Los Angeles' first claim to supremacy was climate. Her next, the production of fabulous quantities of sage honey, the possibilities of which were first demonstrated by John S. Harbison who, back in the sixties, moved his bees south from the Sacramento Valley in central California. Then came the Los Angeles citrus groves and a second delicious honey to enhance her fame.

But unlike the sage, citrus groves proved of a migratory nature and refused to be corralled south of the Tehachapi. They have worked their way steadily northward until thousands of acres flourish at the very door of Chico, and many fine groves as far north as 30 miles. And, oddly, the northern fruit is usually marketed by the time the southern harvest begins. So, although the Tehachapi may be claimed as the beginning of northern California, its further end reaches fully 700 miles beyond this arbitrary line.

And now one-half the length of the state from the Tehachapi, comes Chico featuring California's third A-1 honey, star thistle, as an exclusive product of northern California. Reference to the map will show that Chico bears practically the same relation to northern California as Los Angeles to southern California. Each is the logical center of a wonderfully productive honey district, and each is about the same distance from its respective state lines, Oregon and Arizona. Thus, geographically, the one is southern California; the other, northern, and both with oodles of climate peculiarly their own.

Three-fourths of the state lies between these two centers. Since southern California has never laid claim to this territory, and Chico has no immediate intention of extending its suburbs by annexing Marysville, Sacramento and other middle California towns, why not designate these cities and their counties, middle California, with Berkeley and the State University as their center? This middle section also has its distinctive honey, the main flow being from irrigated alfalfa, though there is considerable sage and orange honey produced in addition.

We now come to a marked apicultural difference between Chico and Los Angeles. The beekeeping part of Chico's population has an aversion to staking off surrounding counties into town lots. Indeed that would be most disastrous, for star thistle is a renegade that flourishes best on large ranches, which, subjected to subdivision and consequent intensive cultivation, would soon cause that intruder to disappear and star thistle honey to become but a fragrant memory. Again, while Los Angeles has for 50 years or more been the center of extreme activity in apiculture, the counties that surround Chico are virgin territory, so far as honey production on the scale practiced in southern California is concerned. The one has arrived at its zenith; the other has barely discovered its own existence.

This self-discovery was aided and abetted by the attendance of five members of the Butte County Bee Association at the Berkeley School for beekeepers held in December, 1921. It is the first time since these extension courses were inaugurated on the coast four years ago that representatives from northern California beekeepers have been present. D. Stuart.

Chico, Cal.

* * *

GRABBING THE HONEY FLOW

How to Have Colonies Ready on Short Notice When Honey Flow Comes Unexpectedly

A generation ago the burden of instructions to beekeepers was on building up colonies in the spring, pulling from the strong colonies to strengthen the weaker, in effect averaging downward. In the hands of the novice or person of poor judgment the results were often disastrous. In the hands of such experts as Dr. C. C. Miller, where clover was the main flow, the practice was excellent; but here in southern New England where a clover flow seldom occurs, it was more often than otherwise that the practice was not good. So some other plan had to be evolved.

FROM THE FIELD OF EXPERIENCE

The plan I am about to describe may not be and probably is not original. When one has read hundreds of bee books and about a dozen magazines every month go under his eyes, he oft stores away in the mind little items which are for the time forgotten and later bob up as original ideas; so I am not at all sure that the following plan is original with me, but it does work profitably.

First, let me explain that we have a series of short flows from which we at times get a surplus; but the flows are erratic. we are never sure of any one of them and now and then get none of them. Sometimes a good flow comes when no colonies are big enough to profit thereby, and then we must be able to step in and help the bees or lose out so far as surplus goes.

I keep all my colonies in pairs, as advised and practiced by Dr. Miller; it has many advantages, though at first I thought differently. That is the basic item in the plan under consideration. The next item is to help up the colonies which are slightly below profitable size; and I do it by pulling from the weak ones, even to the extent of exterminating them. This makes fair ones good, and cuts out all colonies which are not and cannot be producers. It will also be noted that the big, strong colonies are not disturbed—in other words, weakened to help weak or medium colonies.

Now a keen eye is kept on the condition of the plants from which we may get a surplus, also a sharp eye on the weather. It will be seen that one must be familiar with the honey sources of his locality and the nature of the soil and moisture conditions. Even with all this knowledge a change in temperature may upset the best of forecast.

But granting that we anticipate a good flow from some source, at once we proceed to grab for it, making all colonies that have a fair chance of getting it so strong in field bees that they cannot miss it. Right here is seen the immense advantage of the twin stands. One of the two colonies on the stand is moved to a new location, preferably some little distance off, say several hive spaces or into another and distant row. This is to lessen the possibility of the field bees finding their old home.

The hive left undisturbed on the old stand is provided with an excess of storage room, oft by lifting the supers with contained bees from the removed colony to the one on the old stand. This practice is followed with every pair of hives, the only exceptions being where both colonies of a pair are very strong, big enough to produce a surplus without help; such are let alone.

Now for the results. The field bees from the removed colonies are a bit confused on their return, but soon go into the hive adjacent to their old location. Having a load they are well received, and soon all confusion disappears and work proceeds with vim. Henceforward it is only necessary to see that they have plenty of storage room.

What happens to the removed colonies, do you ask? Usually they quite promptly proceed to requeen, and if we are alert we can get without trouble a fine lot of young queens for all our colonies. If we remove the old queen as soon as the cells are well started swarms seldom appear, and even if the old queen is not removed, only supersedure occurs in most cases. These particular colonies get into the very best of shape for later flows or for winter, where the moving practice occurs for a late summer flow.

The producing colonies produce honey as we intended, rarely swarm, but usually finish the season with worn-out queens, though sometimes supersedure occurs.

All this is very plausible, but what are the drawbacks? Absolute need of knowledge of locality as regards soil, moisture and honey sources, and some lifting of colonies. This latter is done before the moved colonies are heavy with honey; in fact, the best time to move them is a day or two after the bees get really busy on the source of the expected surplus.

For a postscript let me add, keep an eye on the removed colonies if a change in the weather suddenly checks the flow; otherwise they may suddenly starve, because they have very few field bees.

Providence, R. I. Arthur C. Miller.

HEAVY YIELDS IN MONTANA

Average of 300 Pounds per Colony from Alfalfa and Sweet Clover

While our location is rather far north to be considered a beeman's paradise, I still think we are able to compete fully with most so-called bee countries. I had 40 colonies, spring count, increased to 68, and took off 8,000 pounds of first-grade light honey, mostly from sweet clover and alfalfa. We have quite a bit of dandelion in spring which comes in handy for brood-rearing.

I left 5,200 pounds on the bees, or an average of 80 pounds, which will seem an excessive amount to southern beekeepers, but we try to play safe up here.

A man within one mile of me took off 12,000 pounds from 40 colonies, spring count; but, of course, he did nothing else, while I ran an irrigated farm in addition to my bees.

In packing bees for winter, we use the quadruple case without covers or tunnels for entrances, just contract to about three inches, and use fine straw or chaff for the packing. My cases are built of shiplap and covered with cheap tar paper.

Carterville, Mont. Claude M. Pease.

SIFTINGS

J. E. Crane

MY! Isn't that an attractive picture on the cover page of Gleanings for April? Almost any one after looking at that would want to open and see what is inside.

* * *

Vol. L on the cover page reminds me that it is now nearly 50 years since I first received that tiny eight-page baby Gleanings. What a healthy, vigorous growth it has had, expanding from eight to seventy-two pages!

* * *

Allen Latham, on page 225, makes out a pretty good case for rearing a good supply of drones during the honey flow. Can he tell us just how many drones it takes to satisfy the sexual instincts of the undeveloped females of a colony? Would not 500 answer as well as 5000? This would give 50 to each comb in a ten-frame hive.

* * *

I put out a mixture of honey and water, half and half, on March 1 to see how much cold it would stand before freezing; but our coldest weather was passed, and we had but one morning when it was as low as 7 degrees above zero. It stood this temperature without any indication of freezing. Who can report a lower temperature without freezing?

* * *

J. D. Yancey, on page 236, objects to dropping the word ''extracted'' before honey on labels, to distinguish it from the old-time ''strained honey''; but he says this old-time quality has nearly disappeared from the markets. This being the case, it would seem to be a good time to drop the word ''extracted,'' giving rather the name or source of the honey instead.

* * *

M. C. Richter, page 223, gives a most interesting account of taking observations on the outside of the hive, that may be studied with profit by young beekeepers. Quite as important, it seems to me, is when entering a yard to note the sound of the bees. A practiced ear can tell at once whether they are having a holiday, swarming, gathering honey to beat the band, or up to the meanest of all business, robbing some defenseless colony.

* * *

Those two articles in April Gleanings, ''Wonder Work of Bees,'' by A. H. Hendrickson, and ''Beekeeping and Agriculture,'' by Geo. S. Demuth, cover one of the most fascinating subjects connected with farming or beekeeping, viz., the cross fertilization of flowers. I wish the facts in these two articles could be put into a small bulletin by themselves and furnished at cost for gratuitous distribution among farmers and fruit-growers. I feel sure a great many beekeepers would like to buy them for this purpose. This subject has become almost a science of itself; yet if we go back 25 years, very little was known for certain about it. My! but isn't this a great world to live in, and a great age of the world to live in, too? What a pleasure to live in the open where such wonders are going on! Yet some folks will neglect these wonderful thoughts and go to the movies or a dog fight for amusement. I am sorry for them.

* * *

In no way is the advance in the beekeeping industry seen more clearly than in the matter of advertising. Fifty years ago a page or two seemed to satisfy the patent-hive vendors and queen-dealers, while today nearly 40 pages of Gleanings in Bee Culture are required to make known the multitudinous wants of honey producers, honey dealers, manufacturers of containers and bee supplies of all sorts, everything a beekeeper can think of, and a great many things few of us have any use for.

* * *

On page 221, the Editor calls attention to the ''Spray Poison Evil,'' which is both timely and important. I do not think it so great an evil as we formerly thought, for in many years it does little harm. If the weather is cool or cloudy, or if dandelions are yielding freely, spraying seems to do little harm; but, taking the years together, it is bad enough. I fear there has been some rather slipshod teaching along these lines in some of our agricultural colleges. Attending a meeting of beekeepers some time ago I related how much damage spraying had done to one of my yards of bees, when a professor arose and made the statement that he did not believe bees had ever been injured by the spraying of fruit trees. Tests made in the laboratory showed that bees would not take poison sprays. I then stated that I had gathered up the dead bees by the handful and sent them to the Department of Agriculture at Washington for analysis and arsenic was found in their bodies. He replied that arsenic might have been found in the bodies of healthy bees. I confess my patience received a severe jolt and my respect for professors and laboratory tests dropped a long way below zero.

P. S.—It affords me pleasure to state that that professor, who was at the head of the apiarian department of an agricultural college for a time, has quit teaching and gone into the more prosaic business of repairing automobiles. We wish him success in his new business.

THE LAND OF CONTRASTS

CONSTANCE ROOT BOYDEN

(Stancy Puerden)

IT would be impossible to sum up the charm of California in one word, but its contrasts explain much of its fascination for me. They begin to dawn on the tourist almost as soon as the train enters the state, and by the time it is running through level, fertile valleys with their semi-tropical growth, their fruit trees, palms and flowers, while, deceivingly close, tower the great mountains, crowned with glistening snow, the contrasts almost take one's breath away. And it is largely due to the mountains that California is so ''contrasty.'' (Our landlady took her dictionary and sewing machine along with her when she rented us this furnished house, but I have heard my brother talk of ''contrasty'' photographs, so I'll just call it a word. One has to coin adjectives, and sometimes use them in the superlative degree, when trying to describe the West, for the old eastern ones are quite inadequate.)

The mountains not only cause the climate to be full of contrasts and are themselves such a beautiful contrast to the valleys, but their appearance from day to day varies greatly. For instance at times they are seen dimly through a blue haze and look far away from us here in Pasadena. At other times they quite disappear behind clouds or fogs, and later a cold rain falls in the valley. Then perhaps late in the day or the next, or the next after that—for California rains are not apt to be mere showers—the clouds break, the sun comes out gloriously and there are the great mountains with snow half way down their slopes, the setting sun tinting the snow to a glowing pink, making a picture no human artist could reproduce.

When a large amount of snow falls on the near-by mountains it creates a curious optical illusion. The mountains seem to be crowding so close to the town that they look fairly menacing, as if they were advancing on us puny mortals to exterminate us.

Ordinarily the San Gabriel range from here looks like a long, unbroken but serrated ridge in which certain peaks merely stand up a little higher than the rest. But a few weeks ago after a heavy snow storm in the mountains, the nearer ranges stood out from the higher ones so distinctly that I felt I was seeing my favorite view through an old-fashioned stereoscope. You who are old enough can remember how pictures gained depth and lost their flatness when viewed through the stereoscope. It was just so with the mountains. The nearer and lower peaks moved toward us, revealing in the background great peak after peak in the blue distance.

A San Francisco man once said to me, ''Los Angeles County has no natural beauty; that country is all reclaimed desert.'' I suspect that is true as far as the beauty of the valley is concerned. But the fact that all this beauty was brought into being by man using the magic of the melting mountain snows makes it all the more fascinating. When we drive about the vicinity of Pasadena with its wealth of shade trees, green lawns, roses and rainbow-hued flowers I like to think of the contrast between the desert it used to be and the beautiful present. One does not have to overwork his imagination to picture the desert; for, in taking almost any cross-country drive, unimproved desert country may be found, and the contrast is emphasized by the perfect, asphalt-like roads.

WOULD you enjoy life in one of those regions where the sun is advertised to shine some three or four hundred days of every year? You would have to take an occasional trip to a cloudy country to bring out the beauty of the climate by comparison. For my part I am thankful that we have the contrasting weather right with us here in southern California, although we do not have the sharp contrast between summer and winter of the North and East. We have days when the sun shines and the air is so dazzingly clear that we can see not only the near-by mountains with Baldy peeping over their shoulders to the east, but also snowy ranges 80 or more miles away, the peaks floating above the horizon like a mirage. And after a few days of that glorious sunshine, when the weather begins to grow uncomfortably warm, soft fogs drift in from the ocean to temper the heat and rest the eyes and nerves.

Before I became a Californian I used to be much interested and a trifle amused to hear people tell of the wonderful variations in climate within a few miles. But after riding about the country immediately after the great freeze and seeing orange groves apparently quite unharmed, while a quarter of a mile away the trees looked as though a blight had descended upon them, those climate stories looked more probable. Indeed, we even saw groves unharmed on one side of the street, while they were badly frosted on the other, due to currents of wind, we were told.

The various valleys between ranges afford such variations of climate that it is possible to raise fruits which thrive in cool climates in the same latitude with oranges. For instance, I have eaten delicious apples which were grown only a short distance from here; and, although apples are not grown on a large scale in this valley, it is nothing uncommon to see them in a yard close to an orange tree.

But it takes a real estate agent to bring out the contrasts in climate. The town of A is from six to eight degrees cooler than B through the summer months, we are informed, because of the draft through the canyon, said towns being not three miles apart. Yes, C is pretty warm in summer if you live in the east part of it, admits a real estate agent, but the west side is delightfully cool, as there is always an ocean breeze around a certain mountain to temper it. D, being not far from the ocean, is cool as a summer resort in summer, according to the agent who lists houses in that region; but, if you mention it to an agent interested in another locality, you will learn that you never could stand the summer down there on the flats as it is so hot.

Now I don't agree with the woman who told us, ''California has more liars to the square mile than any other state in the union.'' I suspect there is truth in all their contradictory statements, at times. They just prove that California is ''contrasty,'' even if it hasn't a well-defined winter and summer.

In other articles I have mentioned the sharp contrast between the temperature in the sunshine and in the shade, a contrast which I very much enjoy, but fail to understand its cause. I suppose the delightfully cool nights which follow the warm days should be attributed to the same cause.

When a Californian is confronted by a tourist who complains of the cold weather preceding a rain he always retorts, ''Well, we don't have to wade through mud and slush even it is a little cold at times.'' It is true, the streets are clean and ordinarily perfectly dry. That is what makes the contrast during a rain so amusing. After it has been raining only a short time both sides of the streets are rushing torrents, making the passage across almost impossible to pedestrians. You see the water rushes down the steep mountain slopes and through the towns in the valley. It is nothing unusual to see a kind motorist drive up to a curb where a lady is standing, take her on his running board, drive across the street, deposit her on the curb and drive on his way. At certain places in Los Angeles heavy planks are strapped to the telephone poles to be used in bridging the torrent from curb to street cars.

During a dry summer in the East small streams sometimes go dry, but here in the West most of the rivers, arroyos or washes, as they are called, have water in them only during or soon after a rain. ''I don't mean to be critical,'' as a friend always says when he does, but if I ever grow homesick for eastern scenery it will be for rivers and brooks with water in them.

AFTER some three months of house hunting I have come to believe that nowhere are California contrasts more marked than in dwellings. There are great estates with enormous houses in any part of the country, but I never saw so many tiny, one-room bungalows as in this vicinity. Whether it forms the nucleus of the permanent home which is built around it later, or whether it is used as the garage later, it is a good way to evade the high rents, and in this mild climate it can be done without great discomfort.

And there are such extreme contrasts in style of architecture. A typical old California house, whether bungalow or two-story, has extremely wide, overhanging eaves, in some cases more than five feet wide, to shade the windows as much as possible. And as soon as his house was finished the owner planted everything he could think of to secure more shade. Magnificent old date palms are in many yards, and great, drooping pepper trees, many varieties of acacia and pergolas with immense vines keep out all the sunshine and light possible. The exteriors of these old houses are apt to be of shingles, stained dark brown, and the interior walls are papered or decorated in something equally dark. One would think the inhabitants of such a house would look like bleached celery, if they stayed indoors much.

In contrast with these old houses is the latest thing in stucco in white or very light colors, perhaps pink trimmed in turquois blue. These have no overhang to the roof and most of them substitute courts, patios or terraces for the comfortable, shady porch, even though there is not a tree on the place to afford any shade. When I see these shadeless, porchless houses and the processions of automobiles on all the boulevards on pleasant afternoons I am inclined to believe that the modern Californian has substituted the motor car for his porch or his own ''vine and fig tree.'' It is only fair to state that there are many charming houses between these two extremes which have both sunshine and shade about them, but I was merely contrasting the old with the very new. As one real estate agent told me, ''If you will have a house with a porch you must be satisfied with something that is a little old fashioned, for porches are seldom built now.''

AN interesting contrast in California is that afforded by the cosmopolitan character of its population. A Californian born and bred is quite rare. I have met only one myself. Here are two questions which are asked us so frequently that I have come to expect them and sometimes volunteer the information: ''How long have you been here and where did you come from?'' A former Massachusetts man who asked me those questions on meeting me said, ''I shouldn't think of asking them back East, but everyone does it out here and no one seems to regard it as rude.'' California might be regarded as a beautiful ''melting-pot'' for making enthusiastic Californians of people from every state and from all other parts of the world.

Beekeeping as a Side Line

Grace Allen

There would not be the hard feeling against us poor sideline beekeepers in the breasts—and pocketbooks?—of the professional honey-producers, if we were all of the type of Miss Josephine Morse of the Cloverley Apiary, Lancaster, Massachusetts.

Nearly all reading beekeepers know of Miss Morse, who is now the enthusiastic secretary-treasurer of the Worcester County (Massachusetts) Beekeepers' Association. But perhaps they do not all realize what a fine example she is of persistence in the face of discouragements, and how convincingly, therefore, she has proven herself a real beekeeper. ''I must have been born to be a beekeeper,'' she admits, ''because nothing can seem to discourage me permanently.''

In another way she seems particularly beekeeper-y. And that is in her appreciations. As a whole, are not beefolk lovers of the beauties of God's good earth? Speaking of the town of Lancaster where she has always lived, Miss Morse calls it a ''beautiful old New England town.'' Don't you love people who love their own home places, recognizing and appreciating their beauties? One thing that helps me to visualize the charm of her beloved Lancaster is her statement that she has lived there all her life, on a farm. So if I see it correctly, it is one of those lovely towns that run on out into the country and defy anybody to say where the town ends and the country begins.

Miss Josephine Morse with her bees.

It was twelve years ago that Miss Morse made her start with bees. She did it most intelligently and logically, as becomes a daughter of Massachusetts. She took a two-weeks' course—an excellent two weeks' course, she calls it—under Prof. Burton Gates at the Massachusetts Agricultural College at Amherst. Then she took over the ownership and care of two colonies of bees that had belonged to a brother. Then the disasters began. There were several cases of severe stinging. Then came foul brood: American foul brood; European foul brood. But, as she says, nothing discouraged her permanently. And now she has 20 colonies of her own, is secretary-treasurer of the county association and is the recognized advisor for many beginners in near-by neighborhoods. She also cares for the bees of several orchardists, as hers is rather a good fruit-growing section. Her own father has gone into rather extensive fruit-growing, especially apples and pears, and is very glad to have his daughter's bees as pollenizers.

Miss Morse has never made any phenomenal crops. One doesn't, you know, in Massachusetts, any more than in Tennessee. One loves it. Apple bloom comes of course when the weather is unsettled—not much clover—but a goodly quantity of blueberry, and later, goldenrod. Miss Morse extracts her honey, putting it up in 16-ounce jars and selling direct to the consumer. She wisely charges according to the prices for similar honey in similar containers in the high-grade grocery stores.

When she started, money didn't enter into her plans at all. There was just the delight of it, and the honey—and a little welcome pin money, too. But her business has so developed that now she feels her interest to be quite decidedly commercial; and still she loves the work.

In addition to her regular yard work, Miss Morse has had various interesting experiences in getting bees out of trees and buildings. She has many calls for help from beginners; she always helps as she would be helped—and as she *is* helped, she adds. She has also developed a new interest among beekeepers of her section in the matter of exhibiting honey and bees at the agricultural fairs, so that while little attention had been paid to this in former years, larger efforts are being put forth now and greater things still hoped for the immediate future. Which is what may always be expected from the leaven of enthusiasm.

Spring in the country! For, after the manner that I boasted of last month, we are country folk at last, burning on cool evenings our own oak wood in the brick fireplace, and walking on moonlit evenings along country roads, sweet now with the scents of spring. And here are the hills, low and gentle, too close perhaps to give us a really impressive ''view'' such as some of our friends enjoy, yet close and chummy; and we love them. We love, too, the dawn through our neighbor's woods lot and the bright wide book of the sunsets spread open along the low ridge to the west.

During the first weeks here, there was the glory of autumn over the earth; in the winter the flush of red where the buck bushes grow and sunsets through bare trees; now, in the spring, there is the miracle of unbelievable greenness and blossom coming back to trees and grass and fertile field and every upward-reaching slope—wild violets at our feet, mountain phlox by roadsides, small gay earth-loving ''May weeds'' over the fields, a blush on the hills where the redbuds bloom and the thrilling beauty of fruit trees—oh, the cherry orchards today!

We have set out—how many will live? we wonder—maples and ''cork ellums'' and hackberries and dogwood and redbud and baby cedars and fruit trees, and many shrubs. And bought an Airedale pup. We named him Sir Jock of Lone Oak! But we call him Jock.

Wondering if the trees we set out will thrive, I am reminded of the aged man whose success in tree planting Vergil records in the apiarian Georgic. I am sorry thus to distress you, kind sir—you who do dislike reference to the classic days of the Emperor Augustus! Must you read it? It is very skippable. But the courteous Managing Editor will tell you that the plans for the rest of this article were badly disarranged by the loss of some photographs somewhere between Medina and Lone Oak Road, modern, up-to-date pictures of modern, up-to-date bee-yards and the people who work them. So it seems a most happy opportunity to return to Vergil long enough to tell about the old man of Corycus, whose gentle life I have been eager to refer to for several months. Your pat and undeniable assertion that Gleanings is being published in 1922 having nearly frightened me permanently into the present decade, you can guess how charmed I am at this pleasant opportunity? Not of my making, you see—merely claimed as it comes. This concession, however, I make—not to quote the Roman poet line after line, much as I enjoy it myself, but to re-tell the substance of it informally, weaving in a few of his especially appealing phrases.

No one knows the name of this old man who has been so charmingly immortalized by Vergil. The poet speaks of him as an aged man from Corycus whose friendship he had made. He owned a few poor roods of worthless land—no pasture thereon for cattle, no convenient food for flocks, no good soil for vines. Yet for all that, there among the thorns, he raised his small plot of greens; and around the greens—this is one reason people have kept on loving him through all the generations of book-lovers and beauty-lovers—he sowed a few white lilies and some poppies and verbenas. And

''. . . . . his soul
Vied with the wealth of kings, when late at eve
He heaped the unpurchased banquet on his board.''

Ah, that unpurchased banquet! Moreover, in spite of the unfriendliness of his soil, his skill made him first to gather spring's roses and autumn's ripe apples. While winter was still laying ''cold curb upon the frozen stream,'' he was ''toying with some soft-tressed hyacinth''—flower-lover that he was.

Will you be surprised to learn that he kept bees, too? He gave them, also, such care that he was the first

''. . . . . whose brooding bees
Were in full swarm: his fingers earliest
Pressed forth the bubbling honey from the combs.''

How he would have enjoyed full sheets of foundation and an extractor! For what challenges our admiration is the way his quiet life of simple wise content was dignified by faithful, intelligent, painstaking labor, with its resulting skill.

He set out lime trees and luxuriant pines. What his fruit trees promised him in blossoming spring, they bore for him in autumn. As for transplanting trees, this is what I keep recalling, when I look out at our recently transplanted maples and hackberries and ''cork ellums.''

''His elm-tree saplings even when full-grown
He could transplant, or pear-trees big and strong,
Or the young plane-tree when its spreading boughs
Screened from the sun the guest who drank his wine.''

No such experts were the dark-skinned toilers who set out our trees! (Yet today two of the dogwood are coming into bloom, and there are signs and promises on one maple and an elm or two.)

Don't you wish we might have known him, the aged man from Corycus? Wouldn't we have enjoyed visiting him, sitting under the spreading boughs of his hospitable plane trees? Doubtless, had he lived today, he would bring up grape juice or lemonade!—and how we would all talk! What questions we would ask him! About beekeeping and hyacinths and his philosophy of life. And if invited, as quite surely we would be—being beekeepers!—we would stay to share the unpurchased banquet heaped upon his board, and feed our souls on the fineness and simplicity and rich, full-flavored personality of this beekeeping lover of God's earth.

Does this picture of Vergil's old man remind you of anybody? Can you not see in it a great resemblance to many beekeepers? Bees and flowers and fruit, skill and content and simple living—do not these things form a large part of the rich later years of most beekeepers? I have sometimes said that my mental picture of the word beekeeper is always an old man, gray-haired and adorably wise and gentle (are not the wise always gentle?), with his bee hives set in an orchard.

In his impressive and dignified lines, ''Gone Home,'' April Gleanings, page 255, Dr. Webley gives our imagination a glimpse of our beloved Dr. Miller being welcomed to the Other Home by Huber and Langstroth and Cowan and the ''gentle Hutchinson.'' Because they were so alike in the fine simplicities and noble dignities and serene satisfactions of life, may not he whom we so delighted to honor—''the Master of the Gentle Craft,'' ''the Grand Old Man of Beedom,'' ''the Sage of Marengo''—have been welcomed also, in that ''white tremendous daybreak,'' by Vergil's aged man from Corycus?

FROM NORTH, EAST, WEST AND SOUTH

In Northern California. Usually there is a considerable amount of honey stored during April. In fact the flow from orange and sage ordinarily is under way during this month. The most noteworthy feature of this season's work is the backwardness of plant life. Sage, orange and practically all other plant life will bloom about one month later than usual. The cold and wet weather is responsible for the lateness of the season. Consequently it is very necessary to supply the bees with plenty of stores. It may not be of uncommon occurrence during the first and second weeks of May to find strong colonies on the point of starvation. This season, especially, there must be plenty of stores all through the breeding season. It would prove very disastrous to neglect this phase of the spring work, as a three or four days' wet spell might occur just before the main flow starts. At this time there is much brood to feed, and, with bees unable to fly, several pounds of honey a day are consumed. We have seen immense colonies honeyless, with not a vestige of unsealed brood in the combs. Don't gamble with nature too much. Supply the bees with a reserve, and remember the three cardinal points during spring work—protection, stores and ample space for brood expansion.

This looks like a very good season and owing to its extreme lateness there ought to be some mighty fine bee weather with exceptionally high daily intakes of nectar from sage and orange, both of which will come into bloom and secrete nectar at about the same time. There is one important thing to provide for during a big honey flow. For spring, the important consideration was an ample reserve of Demuth feeders. Strange as it may seem, there should be provided the same kind of a reserve for the honey flow except, of course, that the feeders should not be full. In other words an abundance of empty comb is what is necessary to take care of the large amount of thin nectar that may be gathered.

The California State Beekeepers' Association is certainly up and doing. We should all do our part to help in their campaign to secure 2,000 members within the next six months. This association is going to be of great benefit to us. It must be strong in membership in order to do the most for us that it can. It is really up to ourselves as producers to bring this about. Active members are the ones that count; such members interest their neighboring beekeepers in their organization, and when we keep up our enthusiasm we achieve results.

Big Sur, Calif. M. C. Richter.

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In Southern California.—The season seems to be slow and backward. The orange trees are showing a slight swelling of the buds, and it now looks as though it might be well toward the last of April before much bloom will appear. I find from my records that it is often the 12th or 15th of April, and sometimes later, before the bees begin getting honey from the orange blossoms. We are apt to forget and think a season exceptionally late, when perhaps it is not much different from the average. When it does turn warm, trees and plants will grow and blossom very fast, and it is well to have plenty of supplies on hand to care for a busy season.

The sages are making a good growth, and the wild buckwheat looks thrifty. But it is too early to tell much of the blossoming qualities of the plants, as the long, slender stems that support the blossoms shoot out very quickly and usually show little or no growth before the early part of May. Other plants are also showing up well. The alfilaria has been blooming for some weeks, but the cool weather has prevented the bees from doing as well as they might, considering the amount of bloom there has been. The willows in some sections have given remarkable results, and in locations where there have been plenty of willows and the bees have had sufficient stores, they have built up well. Where there was no early pollen, the bees did not build up; and some colonies with as much as 50 pounds of honey are very weak and have very little brood. However, generally speaking, it looks as though nothing but a very hot period of weather can keep the honey crop from being satisfactory to the beekeepers.

On a cloudy, cool day I observed 26 bees per minute entering the hive of the average colony. Upon opening the hive I learned that those colonies averaged four and five frames of brood, while those with a less number of bees flying in had only from one to three frames of brood. A little observation along these lines might enable one to secure a fairly accurate idea of the condition of the apiary. By examining only a few hives, and then observing the others from the outside, one might avoid the necessity of disturbing the bees by opening the hives during unfavorable weather.

The weather has been too cold and cloudy for the rapid building up of colonies. Around the orange sections it looks as though not over 50 per cent would be in prime condition for the orange flow.

Considerable disease — especially European foul brood—is showing up in many apiaries. There is nothing quite like a good honey flow to help eradicate these conditions. The winter loss has been quite heavy in many cases; but, as old Adam Grimm once said, "I save all of the combs and I show you how quickly I fill all of those hives again when the honey flow comes."

Corona, Calif. L. L. Andrews.

FROM NORTH, EAST, WEST AND SOUTH

In Arizona. The spring season in southern Arizona has been unusually backward and at present (April 4) is from two to four weeks behind its usual condition for this time of year. In view of the fact that February precipitation was scanty, not giving spring annuals a good start, the prolonged coolness has been rather beneficial to beekeepers, tending to retard brood-rearing and consequent consumption of stores to some extent. In the meantime nectar conditions have somewhat improved, owing to more satisfactory March rains. On March 12 Tucson had the surprising experience of having some five or six inches of snow on the ground, while higher points had somewhat more. A fine rain also fell on April 1-2. This moisture has resulted in the production of small wild flowers which, it appears, will be sufficient to carry strong colonies through to the mesquite-catsclaw honey flow without feeding.

Filaree or alfilaria (*Erodium cicutarium*), a member of the mustard family (*Lesquerella gordoni*), and a form of waterleaf (*Phacelia arizonica*) are in large part furnishing a living for bees in southern Arizona. Fortunate this year is the Arizona apiarist in whose vicinity the filaree has become established. A trip overland from Tucson to Yuma (April 2-3) revealed the fact that the deserts to the southwest are even better supplied with small wild flowers of many kinds this year than is the region of Tucson. Orange and other citrus trees are in full bloom at Yuma, though the area devoted to them at present is too small to be an important factor for any considerable number of colonies. Mesquite, which should be in blossom now at Yuma, is just coming into full leaf.

By the time this reaches its readers the mesquite-catsclaw honey flow will be on at the lower altitudes, and near at hand at the level of Tucson, and if any southern Arizona beekeepers are unprepared for it, they will likely miss a good surplus.

Tucson, Ariz. Chas. T. Vorhies.

* * *

In Oregon.—Winter losses have been unusually heavy in Oregon this year, due to the fact that bees went into winter light in stores and the winter was unusually long and confining. Spring vegetation is close to three weeks late. The willow honey flow started the first week in February in the southern Willamette section. The honey flow from Oregon maple will probably be at least two weeks late.

More large beekeepers are beginning to pack for the winter on the west side. The past winter has demonstrated to many that this is the desirable thing to do. The large hive is also becoming more popular.

The annual meeting of the Oregon State Beekeepers' Association was held at Pendleton, January 26 and 27. Although the attendance was small, much important work was accomplished. Probably the most important step taken was the joining of the American Honey Producers' League and the sending of a delegate in the person of J. Skovbo of Hermiston, Ore., to the Salt Lake City meeting. Steps were also taken to revise the state foul brood law, which is of the antiquated county type. A. J. Sanford of Redmond, ex-president, was appointed as chairman of the committee on legislation. This committee will also have charge of the movement to secure a compulsory grading law, similar to the Wisconsin law.

At the request of the state association the extension service of the Agricultural College will issue a circular news-letter to the beekeepers interested. These letters will be sent to members of the state and county beekeepers' associations and to all others requesting them.

Arrangements are being made for a series of field meetings throughout the Northwest. The following dates have already been set: June 15, Spokane and northern Idaho; June 17, Yakima; June 20, northwestern Washington; June 22, southwestern Washington; June 24, Portland district; June 27, southern Willamette district; June 29, central Oregon district; July 1, Hermiston district; July 3, Ontario district. It is hoped that other northwestern states will line up in the program and that several prominent men from the East will be in attendance. Time is allowed between the field meetings so that the visitors may have opportunity to look over the surrounding beekeeping sections.

Honey seems to be largely out of the hands of the producers but is moving slowly in the retail market. Prices remain approximately the same. H. A. Scullen.

Corvallis, Ore.

* * *

In Louisiana.—The swarming season has come and is a thing of the past for this year in the southern portion of this state. March 14 I visited a beekeeper near Houma, La., and while in his apiary two swarms emerged from their hives and clustered in trees close by. Upon examining the inside of these hives I found over 50 pounds of new white clover honey in each super though there are 90 days more before the clover is killed by the warm weather, July being the usual time.

The white clover is very rank here now, in places averaging about eight inches high. Later in the season it sometimes grows to the height of twelve inches.

The tupelo gum in this locality is now spreading its beautiful light-green foliage. This tree produces a very bountiful crop of honey in a good season, and this season looks like one of the most favorable for the past four years.

FROM NORTH, EAST, WEST AND SOUTH

Beekeepers further north in Louisiana should examine their hives at once, and ascertain if there is room in the supers to hold this big crop, which is sure to come. Order a full supply of fixtures at once from your nearest dealer. Pay a little more attention to your bees at this season, and you will find there is nothing else on the farm which will pay greater dividends for the small outlay of money invested than your bees.

Don't forget that the ''penny wise and pound foolish'' idea cuts deeper in the beekeeper's pocketbook than almost anything else. If you try to crowd your bees in one or two supers, you force them to swarm; while, on the other hand, if you give them ample room, the bees will pay you over and over again for your expense and trouble. Here in Louisiana in some localities a brood-chamber should have five supers over it, rather than only one, which is usually furnished. Try it out this season and find out how fast bees can make money for you.

Baton Rouge, La. E. C. Davis.

* * *

In Mississippi.—Extemely favorable weather during March and early April has enabled colonies to build up to swarming strength from the Gulf Coast to the Tennessee line. The early blooming honey plants, wild plum, redbud and fruit trees have secreted nectar abundantly, and the later-blooming plants are in such excellent condition that nothing short of a hard freeze or excessive rains will prevent beekeepers in this state from making a bumper crop. A red-letter warning, reading ''Beware of Swarming,'' should be handed each beekeeper down here, for such weather is extremely conducive to swarming and swarming is ruinous to early honey crops.

Young queens and a hive-body of honey above the brood-chamber are cheap winter insurance in Mississippi. The package beemen know this and practice it. Their colonies are so heavily populated now that I'm sure packages will be cheerfully put up with gospel measure. And remember, Mr. Northern Beekeeper, our thorough inspection service assures you that bees from Mississippi are free from foul brood. R. B. Willson.

Agricultural College, Miss.

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In Florida.—The last two weeks in April to the first week in May is the best period for requeening in this part of Florida. At this time the palmetto is trailing out to the end of its bloom, the coral sumac and sea grape are through for the year, and the black mangrove is just beginning to open its first buds here but will not be at its best until around the first of June. There is a period just at this time, that varies from year to year, of three to six weeks, during which there is very little nectar coming in.

The old queens slacken in their egg-laying, and many show signs of failing. This slackening in the brood-rearing just at this time means that many colonies will go into the best part of the mangrove flow weak in field bees, and the best days of the crop will be past before the field force is back to full strength again. A young laying queen introduced at this time will speed up egg-laying and bring the colony up to the mangrove flow in good strength of bees of just the right age.

If the beekeeper is prepared to take advantage of these six weeks preceding the mangrove bloom, he can have two colonies ready to gather the crop from mangrove where he had one for the palmetto. The colonies have all reached the swarming condition on the spring flow, and, if the beekeeper is provided with young laying queens, he can divide his colonies, and the young queens will boom them along, during this period of little flow, into better colonies than the old colonies would have been with old queens.

Queens wear out much faster in this climate than in the North and many develop into drone-layers before the end of their first year. Occasionally a queen will develop into a drone-layer in a few months, but this is due to poor mating, possibly with a drone reared in a worker-cell from some drone-layer.

We enjoyed a visit recently from the State Apiary Inspector and his assistant, J. C. Goodwin and Chas. A. Reese, who were on an inspection tour of this section of the state. They said that they had found no disease in this part of the state. Florida enjoys an almost complete freedom from infectious bee disease, and, with the few centers of infection being rapidly cleaned up, it will not be long until this state will be entirely free from American foul brood.

C. E. Bartholomew.

Key Biscayne, Fla.

* * *

In Southern Indiana.—In many respects the coming season holds great promise, but in some respects it does not. The winter has been a fair average of our southern Indiana winters. There was considerable weather when the thermometer registered 10 or 15 above zero, the coldest being 3 above. This condition kept the bees contented and they remained in their hives most of the time, although there were plenty of warm days for them to take cleansing flights. The weather gradually warmed up about the first of March so that brood-rearing began a little later in a normal manner. In my own colonies, brood-rearing began the latest in the season that I have ever observed it, most colonies containing eggs only about March 15. I am not sure whether this was caused

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by the cool weather before that time, or that it was due to the fact that, as the colonies were short of stores in the fall, they were given large quantities of sugar. It is possible that, due to the fact that they had little pollen in the hives, they waited for pollen this spring before beginning brood-rearing. At any rate, the colonies have come through in fine shape and seem contented with the sugar stores, and, as the soft maples come on with their pollen, the bees are gathering it at a great rate and brood-rearing is coming on with a rush. I believe they will be stronger for the honey flow than they have been when they began brood-rearing earlier. Time will tell. At this date, April first, plum blossoms are creeping out and the pear buds and the peaches are swelling, so that the season looks good for normal brood-rearing. So much for the favorable conditions. Now for the unfavorable ones. In many sections near here the fall crop was a failure. In some cases the bees got a little from Spanish needles and in others a slight stimulative flow from smartweed. This caused them to fill the hive with brood, and winter found the hives full of bees but short of honey. If the beekeeper was on the job and supplied them with stores, they are in fine condition; but if he did not, about 25% are dead at this time from starvation and another 25% will die between now and the time of our honey flow, the latter part of May. So I wish to sound a warning, and I wish Gleanings would print it in large letters with red ink. EXAMINE YOUR BEES AT ONCE and, if they have not three or four combs packed full of stores from top to bottom, FEED or the bees will starve.

Vincennes, Ind. Jay Smith.

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In Pennsylvania.— Bees have wintered fairly well. Those in cellars have not fared quite as well as those outside in good packing cases. Several reported taking bees out of cellars in early March because of dysentery. Many of these cellars are too cold.

Late honeydew and aster honey are reported to be the causes. Because of these bad foods gathered in late summer most of the bees in the state would winter much better if fed 15 pounds of granulated sugar after brood-rearing is over.

The usual heavy winter loss and weak colonies have occurred among neglected bees. Such bees cannot be made to yield a good honey crop. However, the beekeeper will be well repaid in supplying plenty of food to colonies which are short. giving needed breeding room for the queens, providing protection for the hives and replacing all failing queens. The plan of wintering in two-story hives, the upper one full of honey, a good packing case and good queens reared in the previous August, has proven its worth this winter. Colonies thus prepared are in fine condition. This plan solves the winter and spring and European foul brood problems, and gets a big honey crop.

Nectar-bearing plants of all kinds are in splendid condition. Most of the state had an abundance of rain last summer and fall. No winter-killing is apparent and spring is advancing slowly. All this is favorable to a good honey crop this year. Most of the nectar will go to waste because of the lack of bees to gather it.

Numerous inquiries indicate a lively interest in the new law making it a misdemeanor to keep bees in anything but movable comb hives after July 1, 1923. After that date a penalty is attached to keeping bees in hives that will not permit the inspector to take out freely the combs for examination. The object of this law is to reduce the danger from American foul brood.

Thousands of box hives in the state should be transferred in order to make the bees profitable to their owners. Geo. H. Rea.

State College, Pa.

* * *

In Iowa—Our bees went out of the cellar March 15, earlier than usual, but owing to the uneasiness of the colonies it was thought best to put them out. This condition has been happening altogether too frequently in late years, and is an unexplainable circumstance as far as we are concerned. We never have wintered a bee other than in this cellar as long as we have been beekeepers, which is close to 20 years.

We have held the bees in this cellar until April 15, and had them no more uneasy than they were this year a month earlier. The past three years they have consumed more stores than usual, which I cannot account for. However, we noticed a row of bees, which were in a measure isolated from the rest, being more quiet and the winter mortality not being so high, and wondered if we were not crowding our bees too closely in the cellar. The rows are piled five high, with a space of two or three inches between piles. Then comes a two-foot alley and another row piled facing the other row. If a few colonies happen to get a little uneasy it is possible they might stir up the others. Who knows?

If the beekeepers in this part of Iowa do not keep a close watch, they will lose heavily in bees, as well as having what colonies do pull through far too weak for the clover flow. Bees will have to have the attention of the apiarist this spring if they make good on the flow, which usually starts about June 1.

The ground is soaked and has been ever since last fall. The clover is starting nicely and appears to have come through the winter well notwithstanding the ground was bare all winter. We were just a little pessimistic about coming through, as we had some very soft weather, as well as some cold enough to send the frost down about four feet, and the ground bare of snow.

Center Junction, Iowa. W. S. Pangburn.

* * *

In Wisconsin.—The indications are that the beekeeping situation in Wisconsin is normal plus. There has been very little snow in the southern part of the state, but the clover does not seem to have been seriously injured. Most of the beekeepers with whom we have talked seem to feel that their bees are in unusually good condition. Few bees have died from dysentery, and the losses are due mostly to starvation. Bees wintered out-of-doors have used an unusually large amount of stores, presumably because of the mild weather.

The situation in the northern part of the state is even more favorable than in the southern part. The entire northern section has been covered with a blanket of snow to a depth of several feet, and, as a result, the bees wintered out-of-doors have had excellent protection.

The clover should be in excellent shape due to the heavy snow fall and subsequent protection from periods of freezing and thawing. A cold spell of about a week's duration occurred the latter part of March, which held the buds back in the southern part of the state and also to some extent the development of the bees. As brood-rearing began quite early and the bees had no opportunity to get pollen in the field, there is some chance that a good many colonies have been reduced by spring-dwindling on account of being unable to rear brood as fast as the old bees died off. If the bees have been given proper protection during April and we have a little well-timed rain in the summer, this should be a banner year for Wisconsin.

In spite of the low price of honey, the interest in beekeeping does not seem to be lacking, and quite a number of new beekeepers are making a start. The attendance of beekeepers at local association meetings during the winter has been very good and the spirit of co-operation seems to be increasing. More and more of the Wisconsin beekeepers are becoming interested and are making an effort to do some advertising.

Madison, Wis. H. F. Wilson.

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In Ontario. — The latter end of March was colder than the first two weeks of the month here in Ontario; and possibly that condition was better for the bees than if the weather had been warmer, as vegetation was held back, lessening danger from frosts at a later date. Speaking generally for Ontario, based on reports from many parts of the province, I would say that prospects are above the average, so far as clover is concerned. Last year clover made a rank growth and, from what I can learn, the strong root growth saved the plants even in localities like our own here in York County where there was but little snow all winter.

I have just returned from a visit to our Simcoe County yards where the clover has been covered well all winter. The clover and wheat just uncovered appear about as green as they did last fall. As to the bees, judging from our own apiaries and from reports from others, they have also wintered above the average. While at the Simcoe County yards I made a superficial examination of each colony, being concerned only as to whether stores were present in all cases. Among the 300 colonies there, not a single one that had been normal last fall is dead. About a half-dozen hives were without any live bees; but an examination showed that the colonies had been queenless last fall when packed for winter, as the hives were heavy with honey, very few dead bees were in evidence, and there were no signs of brood. This may seem like an evidence of carelessness—packing away a few queenless colonies in the fall, but I am free to confess that it happens each season. Running a large number of bees is a different proposition from confining one's attention to a single apiary, and, in our case at least, we always expect a few things like I have just mentioned, to be charged up to profit and loss.

Last week I was in Toronto and while there I made inquiries as to the condition of the honey market. I found little evidence of much honey in hands of dealers, and one well-known handler of honey told me that the demand was then the best that he had experienced since last year's crop came on the market. With the market well cleaned up of old honey, at least one factor is favorable to the disposition of the crop we hope to produce this year. With bees wintering well and prospects good for clover, perhaps we might need the aid of the proposed co-operative association earlier than some of us have believed. Latest reports from Secretary Millen of Guelph informs me that a charter is being taken out and the beekeepers of the province will have an opportunity to subscribe for stock before this year's crop is harvested.

Two cars of package bees and nuclei have been ordered by the Ontario association for the benefit of its members. These cars are to arrive about May 1st. In addition to getting the bees for members of the association, Secretary Millen and his staff are also handling supplies and containers for the members.

Markham, Ont. J. L. Byer.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Double Brood-chambers for Spring. I use 10-frame equipment and follow the two-body manipulation as early in the spring as possible. A great deal of emphasis should be placed in giving the bees all of the winter stores they can use. In my locality a 10-frame hive will have to weigh 65 pounds at the beginning of the wintering period. If, therefore, these colonies are provided with sufficient stores early in the fall and given extra room the first thing in the spring, they build up quickly into larger and energetic producers. Of course, the bees must be wintered well.

No one can quarrel with Mr. Stahlman at Knox, N. Y., a photo of whose splendid apiary was shown in July Gleanings. His record speaks for his management. However, in my own beekeeping, I have tried to avoid as much as possible the clustering of bees on the outside of the hives. We must keep all of the bees working all of the time. I have laid great emphasis on what Mr. Pettit has termed the ''Morale of the Hive,'' and I find that nothing is more inclined to make a colony balky than to allow clustering.

My success in swarm prevention I lay to the fact that I try to keep all of the bees busy by allowing a great sufficiency of room not only to the queen but the young bees and field bees as well. The last season I cut no queen-cells and had but two swarms in an apiary of 80 colonies.

For our use the 10-frame equipment is more satisfactory, although I believe that without the two-body manipulation it would not be entirely successful. By careful attention to the plans I have mentioned above I have found that this equipment enabled me last season to average considerably over 200 pounds per colony, spring count, in a season which was only average. From my experience in the last three years, careful observation and such investigation as I have been able to make, I am inclined to believe that an average of at least 200 pounds is possible over a period of five years, if the plans mentioned above are carefully followed.

Scotland, S. Dak. O. G. Borton.

O. G. Borton secures enormous colonies in standard hives by the two brood-chamber plan. He expects to average 200 pounds per colony by this management.

A New Way of Equalizing Colonies. A splendid way to help backward colonies which have not worn-out queens in spring: Place an excluder board which has four additional ⅜-inch cleats nailed around the edges, underneath, which makes an additional space above the frames on all colonies from which you expect assistance in the way of drawing young bees. As these colonies become strong you will find the young bees clustering under the board in this extra space. All the young bees like to cluster in this warm space. Simply remove the board with its cluster of young bees and dump in front of the hive needing help. No danger of losing queens this way in either of the colonies, and the bees ''stay put.'' This method surpasses shaking bees (old and young) from combs and sometimes the queen or adding combs of brood. It is safe, sane and simple. Don't draw from the strong too near the honey flow. J. H. Fishbeck.

St. Louis, Mo.

JUST NEWS

Editors

THE American Honey Producers' League has accepted the generous offer of Colin P. Campbell, Grand Rapids, Michigan, to compile and make a digest of all the court decisions affecting beekeeping and the legal questions arising from beekeeping. Mr. Campbell has offered to do this work without compensation, asking only that the cost of clerical work be paid. The work will be published in booklet form and sold to beekeepers. The League is now requesting donations from beekeepers and dealers in honey to help pay the cost of publishing this work. It is estimated that it will cost about $500 to publish it. Donations for this should be sent to the secretary of the American Honey Producers' League, P. O. Box 838, San Antonio, Texas.

In the preliminary report of the American Honey Producers' League from which the financial statement published in this journal in the March issue was taken, one important item was omitted, perhaps through modesty on the part of the genial and energetic secretary. The item was that of $2400 for the salary of the secretary for 1921, which has not been paid. The secretary was employed by the executive committee on a basis of $200 per month.

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The Colorado State Agricultural College, Fort Collins, Colorado, reports an enrollment of 62 students taking the course in beekeeping.

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The directors of the Idaho-Oregon Honey Producers' Association have decided to close their office and warehouse at Caldwell, Idaho. The business will be transferred to Parma, Idaho, and placed in the hands of the director of that district. All communications to the Association should be sent to Parma, Idaho.

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The A. I. Root Co. of California, now owned and operated by the Boyden Bros., has just arranged to handle the bee supply interests of the Miller Box Co. of Los Angeles. While Milton Metzler, owner and general manager of the Miller Box Co., retains a financial interest in this work, he is now able to give his entire attention to his growing business in sash and doors.

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An international congress of beekeepers has been called to meet at Marseilles, France, Sept. 18-21, 1922. Beekeepers of the world are asked to send delegates to this meeting. No doubt many American beekeepers and instructors in beekeeping will want a personal membership, even though they have no thought of attending the meeting. The fee for personal membership is 10 francs and for national, state or local associations 50 francs, payable to L. Tombu, 26 Rue D'Angleterre, Huy, Belgium. The Secretary of Publicity is P. Prieur, Place Ste-Croix, Poitiers, Vienne, France.

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Prof. R. Owen Wahl of the Grootfontein School of Agriculture, Middelburg, Cape, Union of South Africa, who is spending several weeks in the United States studying entomological problems spent a week at Medina to study American beekeeping methods and equipment. Prof. Wahl is doing this in order to fit himself better for his work in teaching in South Africa.

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The Mid-West Horticultural Exposition, which is to be held at Council Bluffs, Iowa, in November, will have one of the most extensive and attractive exhibits of honey and wax ever shown in this country, judging from the movement now under way to increase further the cash prizes offered to exhibitors. The association has offered prizes amounting to $600, and it is expected that this amount will be increased by at least $200 more. The association expects to attract exhibitors from Pittsburg to the Rockies.

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The three new bulletins on beekeeping, which were announced in our February issue, page 74, were in some manner unexpectedly delayed in the Government Printing Office, so that many were disappointed in not receiving promptly the copies they asked for. These bulletins are Farmers' Bulletin 1251, "Beekeeping in the Clover Region"; Farmers' Bulletin 1216, "Beekeeping in the Buckwheat Region," and Farmers' Bulletin 1222, "Beekeeping in the Tulip-tree Region." They are now being distributed and can now be had free by writing to the Bureau of Entomology, Washington, D. C.

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The American Honey Producers' League, through its schedule committee, is continuing its efforts to arrange a national schedule of consecutive beekeepers' meetings, and the committee has sent out a series of questionnaires to all of the state associations. Any secretaries of state associations who have not received this questionnaire should write to H. F. Wilson, University of Wisconsin, Madison, Wis., and give information as to the time of the year when meetings are held and whether or not your association would like to be included in the schedule of the American Honey Producers' League.

WHO'S WHO IN APICULTURE

We have again corrected our page of "Who's Who in Apiculture," bringing it down to date as of April 1. This page should be kept for reference so that inquiries regarding brood diseases or general questions on beekeeping can be sent to the proper official in the respective states. In those states where beekeeping is taught in the State Agricultural College, beekeeping questions of a general nature can be sent direct to the instructor in beekeeping at the college.

State or Province	Beekeeping Taught in* Agrl. College	Foul Brood Law?	Net Weight Law?	State Inspector.	Secretary State Association.
Alabama........	Yes	No	No	None.	M. C. Berry, Montgomery.
Arizona...... ..	Yes	Yes	Yes	Don C. Mote...Phoenix City	G. H. Frizzell, Tempe.
Arkansas.......	Yes	No	No	None.	J V. Ormond, Elba.
Brit. Columbia...	No	Yes	Yes	W. J. Sheppard......Nelson	W. J. Sheppard, Nelson.
California.......	Yes	Yes	Yes	County System.	C. D. Stuart, Oakland.
Colorado........	Yes	Yes	No	N. F. Boggs.....Fort Collins	None.
Connecticut.....	Yes	Yes	Yes	Dr. W. E. Britton, New Haven	L. S. Burr. So. Manchester
Florida.........		Yes	Yes	J. C. Goodwin....Gainesville	R. H. Fryer, Sumatra, Fla.
Georgia........	No	Yes	Yes	S. V. Brown.........Boxley	L. C. Walker, Alma.
Idaho..........	Yes	Yes	No	W. H. Wicks..........Boise	P. S. Farrell, Caldwell.
Illinois.........	No	Yes	No	A. L. Kildow.......Putnam	M. G. Dadant, Hamilton.
Indiana........	Yes	Yes	Yes	H. N. Wallace...Indianapolis	C. O. Yost, Indianapolis.
Iowa...........	Yes	Yes	No	F. B. Paddock.........Ames	F. B. Paddock, Ames.
Kansas.........	Yes	Yes	No	Dr. J. H. Merrill.Manhattan	O. F. Whitney, Topeka.
Kentucky.......		Yes		H. Garman........Lexington	H. Garman, Lexington.
Louisiana.......	No	No	No		E. C. Davis, Baton Rouge.
Maine..........	No	Yes	Yes	G. A. Yeaton........Augusta	F. L. Mason, Mechanic Falls.
Manitoba.......	No	Yes	No	L. T. Floyd........Winnipeg	L. T. Floyd. Winnipeg.
Maryland.......		No	No	G. H. Harrison,Jr., College Pk	Prof. E. N. Cory, College Park.
Massachusetts...	Yes	Yes	Yes	B. N. Gates.........Boston	Miss J. Morse, So. Lancaster.
Michigan.......	Yes	Yes	Yes	B. F. Kindig........Lansing	R. H. Kelty, E. Lansing.
Minnesota	Yes	Yes	Yes	C. D. Blaker ...Minneapolis	O. L. Wille, St. Paul.
Mississippi......	Yes	Yes	No	R. W. Harned..Agri. College	R. P. Dunn, Greenville.
Missouri........	Yes	Yes	No	None in operation.	Miss Nina Scott, Clinton.
Montana........	Yes	Yes	Yes	R. J. Kleinhesselink, Hardin	A. W. Strickland, Big Timber.
Nevada.........	No	Yes	No	Geo. G. Schweis.......Reno	L. D. A. Prince, Reno.
New Brunsw'k...	No	Yes		H. G. Miller... Fredericton	H. G. Miller, Fredericton.
New Hampshire..	No	No	Yes		J. R. Hepler, Durham.
New Jersey.....	No	Yes	Yes	E. G. Carr.......New Egypt	E. G. Carr, New Egypt.
New York.......	No	Yes	Yes	Geo. G. Atwood......Albany	O. W. Bedell, Earlville.
North Carolina...	Yes	No		None.	J. E. Eckert, Raleigh.
Nova Scotia.....	Yes			W. H. Brittain........Truro	
Ohio...........	Yes	Yes	Yes	E. C. Cotton......Columbus	Prof. J. S. Hine, Columbus.
Oklahoma.......	Yes	Yes	No	R. L. Blackwell...Lexington	H. G. Howard, Wewoka.
Ontario.........	Yes	Yes	No	F. Eric Millen.......Guelph	F. Eric Millen, Guelph.
Oregon.........	Yes	Yes	Yes	County system.	H. A. Scullen, Corvallis.
Pennsylvania....	No	Yes	Yes	C. N. Greene.....Harrisburg	C. N. Greene, Harrisburg.
Prince Ed. Island	No	Yes	No	H. Newson....Charlottetown	None.
Quebec.........	Yes	Yes	Yes	C. Vaillancourt......Quebec	J. A. Prud'homme. St. Philom.
Rhode Island....	No	Yes	Yes	Prof. A. E. Stene...Kingston	E. D. Anthony, Barrington.
South Dakota...	Yes	Yes	Yes	L. A. Syverud......Yankton E. W. Fox........Fruitdale	Mrs. L. B. Slade, Mitchell.
Tennessee......	Yes	Yes	Yes	J. M. Heatherly ..Knoxville	G. M. Bentley, Knoxville.
Texas..........	Yes	Yes	Yes	M. C. Tanquary, College Sta.	Miss A. Hasslbauer. S. Antonio.
Utah...... .	Yes	Yes	Yes	D. H. Hillman, S. Lake City	F. B. Terriberry. S Lake City.
Vermont.......	No	Yes	Yes	E. G. Brigham...Montpelier	E. W. Larrabee Shoreham
Virginia........	Yes	Yes		None.	W. J. Schoene. Blacksburg.
Washington.....		Yes	Yes	B. A. Slocum.......Pullman	C. E. Starkey. Prosser.
W. Virginia. ..	Yes	Yes	Yes	M. K. Malcolm....Charleston	W. C. Griffith. Elm Grove
Wisconsin......	Yes	Yes	Yes	Dr. S. B. Fracker...Madison	Mrs. M. A. Hildreth, Madison.
Wyoming.......	No	Yes	Yes		Oliver Hower. Basin.

United States—Investigation and Demonstration in Beekeeping, E. F. Phillips, Apiculturist; Bureau of Entomology, Washington, D. C.

Dominion of Canada—Investigation in Bee Culture, C. B. Gooderham, Dominion Apiarist; Central Experimental Farm, Ottawa, Canada.

American Honey Producers' League—H J Farks, Secretary; P. O. Box 838, San Antonio, Texas.

* Beekeeping taught also in some other colleges and schools in Alabama, Arizona, Arkansas, California, Indiana, Iowa, Kansas, Maryland, Massachusetts, Ohio, Quebec, Tennessee, Texas, Virginia and West Virginia.

GLEANED BY ASKING

Geo. S. Demuth

QUESTION.—When should I give a second brood-chamber to build up my colonies in the spring, and when should I unpack?

T B. Stauffer.

Ohio.

Answer.—This depends upon how strong the bees are in the spring and how rapidly they build up. The second story should be given as soon as or just before the bees need extra room. If the colonies have wintered well and are well supplied with stores, this should be early in May in your locality. It is well to leave the bees packed until the latter part of May, but it will be necessary to enlarge the entrances before that time to suit the needs of the colonies.

Swarming Out of Newly Hived Swarms.

Question.—Why should I have so much trouble to get my swarms to stay in the hive? I clipped the queen's wings so she had to stay, but she crawled out repeatedly until the swarm became utterly bewildered. Frank Switz.

New York.

Answer.—Newly hived swarms sometimes swarm out because the hive is too hot or too small, and sometimes when no cause for their dissatisfaction can be found. If the hive is left near where the swarm clustered, apparently the returning scouts induce the swarm to leave and go to the new home which they have selected. For this reason the usual recommendation is that the hive be moved to its place in the apiary as soon as the swarm has entered or that the swarm be carried to the hive already located in the apiary. Swarming out because of discomfort can be prevented by placing an empty hive-body below the new brood-chamber for two or three days, shading the hive and providing complete ventilation. The empty hive ready to receive the swarms should be kept in the shade.

Prevention of After-swarms.

Question.—We placed the first swarm on the old stand to get all the field bees and moved the old hive away, but without success. Two more swarms came out. What caused the failure?

Illinois. Geo. H. Froelich.

Answer.—If you moved the parent colony to its new location at the time you hived the first swarm, it is not at all surprising that they swarmed again. The parent colony should be left close by the swarm for six or seven days, then moved away with the least possible disturbance while the bees are working freely in the fields and preferably early in the afternoon while the young bees are out for a playflight. This robs the parent colony of most of its bees just before the young queens begin to emerge, making the colony too weak to swarm. If the parent hive is moved away at the time of hiving the prime swarm or even a few days later, it has time to regain sufficient strength to swarm. If the prime swarm was delayed by bad weather, of course the parent colony must be moved away sooner; and if the prime swarm issued before any of the queen-cells were sealed, as sometimes happens especially with Italians, the parent hive should be moved away later. If the hive is moved away when the bees are not flying or if the colony is greatly disturbed in moving, it will not be sufficiently depleted to prevent after-swarming. This method of preventing after-swarms is difficult when the hives are close together in rows, but practically never fails when properly carried out.

The Use of Queen Traps in Swarming.

Question.—Is putting a queen trap on every hive during the swarming season a sure way to stop swarming or is a lot of super room sufficient to do this? Charles Dalrymple.

New York.

Answer.—The queen trap does not prevent swarming. It catches the queen when the swarm issues, and thus prevents the swarm from leaving and makes it easy to hive the swarm. Plenty of super room at the right time and in the right place greatly helps in reducing swarming but does not always prevent it, especially if comb honey is being produced.

Clipping Queen of After-swarm.

Question.—We have a colony of bees that swarmed twice this season; so we clipped the queen's wings, that they might not swarm again. They do not seem to work so well as they did. What can be wrong with them?

New York. M. E. Copeland.

Answer.—If you clipped the queen's wings soon after the second swarm issued, you probably did this before this young queen had taken her mating flight. This would result in listlessness and finally in the dwindling and death of the colony, unless you supply them with a queen later. The colony could not raise another queen at that time, for they have no larvae from which to raise one. Of course, the bees may have quit working so well because the honey flow is over.

Increase Without Reducing Honey Crop.

Question.—How can I double the number of my colonies this season and not impair my honey crop? John Smaill.

Quebec.

Answer.—Although your question sounds like a paradox, there are conditions under which increase can be made without decreasing the honey crop, sometimes even increasing it; but, as a rule, increase is made at the expense of the surplus honey. In localities having a relatively late honey flow, such as the buckwheat region, some parts of the alfalfa region, and in some of the southern states, the colonies can sometimes be divided six weeks before the main honey flow, resulting in practically doubling the crop of honey. Such a procedure in localities having an early honey flow, such as the clover region of the North, would, of course, result in a greatly reduced honey crop. In such localities increase can be made at little expense at the close of the main honey flow, thus utilizing the bees that came on too late to take part in gathering the crop. This would, no doubt, be the best time to make increase in your locality.

Difference Between Swarming Cells and Supersedure Cells.

Question.—How can one distinguish between the preparations for superseding and for swarming? J. B. Stuyvesant.
California.

Answer.—In the case of supersedure, the general appearance of the brood and the condition of the colony usually reveal some indications that the queen is failing, scattered brood being one of the chief symptoms. Fewer queen-cells are built for supersedure, often only one or two being built at first, then a few others started later, so that the few supersedure cells vary greatly in age. For swarming many queen-cells are started at nearly the same time. The strength of the colony and the amount of brood should also be taken into consideration. It must be remembered that when supersedure cells are started during the swarming season, swarming may follow, even though the apparent motive in building the queen-cells was originally only supersedure. Sometimes even comparatively weak colonies will swarm as a result of the presence of supersedure cells during the swarming season.

Uniting Previous to the Honey Flow.

Question.—Just when and how should we double up colonies to make them strong for comb-honey production? Joseph Fekel.
New Jersey.

Answer.—If uniting is necessary to make the colonies strong enough for super work, this should be done at about the beginning of the main honey flow. It is much better to manage so that the colonies are strong enough when the honey flow begins, without uniting whenever this is possible. This can be done in most localities provided you know when to expect the main honey flow.

When Further Swarming May Be Expected.

Question.—If I take all the brood except one frame from every strong colony shortly before the honey flow, leave all the old bees and the queen in the hive on the old stand and move the old brood-chambers to a new stand, giving to each a young laying queen immediately, will there be any danger that either the parent colony or the swarms will swarm again the same season?
Wisconsin. Otto Saewert

Answer.—If the honey flow is long enough some of the artificially made swarms may swarm again the same season. The parent colonies treated as you describe will rarely swarm again the same season; but, if you wait ten days after making the artificial swarms, then destroy all queen-cells and introduce the young laying queen, the parent colonies are practically safe from further swarming the same season.

Finding Clipped Queens in Swarming.

Question.—If I clip my queens' wings, will I be comparatively safe in finding them somewhere within the yard after they swarm when I return in the evening? J. H. Sturdevant.
Nebraska.

Answer.—No. Many of them will go into the wrong hive when the swarms return. You will probably not find any queens on the ground when you return in the evening. Neither do the swarms always return to their own hive, especially if there are many colonies in the yard. Sometimes on returning, the bees of the swarm enter several hives, often many of them being killed on entering. Of course it is better to lose the clipped queens than to lose the swarms, as would be the case if the queens were not clipped when no one is present to take care of them. If you expect to permit swarming while away during the day, it will be better to put queen traps on all colonies that are liable to swarm if you desire to save the queens. It will be better still to examine each colony once each week during the swarming season to anticipate swarming, either swarming them artificially or taking away the queen when they can no longer be induced to go ahead with their work without preparing to swarm.

Making Increase Previous to the Honey Flow

Question.—Will it be advisable for me to divide my colonies this spring, making two four-frame nuclei from each since I want increase?
Pennsylvania. S. B. Wage.

Answer.—If you depend upon buckwheat or other late-blooming plants for your surplus honey and do not have an early honey flow sufficient for surplus, it will be well to divide the colonies in the spring. This should be done in time to build both divisions up to full working strength in time for the main honey flow. Where the main honey flow comes early, as in the clover region, the division for increase should not be made until the close of the early honey flow.

Requeening in European Foul Brood Treatment.

Question.—What is the reason for recommending requeening in the treatment of European foul brood? J. G. Harmon.
California.

Answer.—Requeening in European foul brood treatment accomplishes two things, which are both important in the control of this disease. First, by killing the old queen and later giving a ripe queen-cell or a young laying queen, there is an interval of no egg-laying, which gives the hive workers an opportunity to clean out the dead larvae and polish the cells thoroughly before brood is again reared in them. The period of no egg-laying recommended for this is from 10 days to 27 days, depending upon conditions. Second, by replacing the old queens with young Italian queens of a strain which clean out the dead larvae more promptly and thoroughly, there is less chance of the disease's appearing again.

TALKS TO BEGINNERS

Geo. S. Demuth

WHAT attention do the bees need during the month of May? That depends. In some parts of the country the greater portion of the season's honey crop will be gathered this month. In these favored spots the beekeepers are now busy putting on empty supers as the bees need more room, taking off the supers filled with honey and, no doubt, struggling with the problem of swarm control. In other regions the honey harvest is still a month in the future, and in some cases even two months or more.

While one might expect the honey harvest to begin early in the South and move northward as the season advances, just as the wheat-harvest time sweeps northward from Oklahoma to North Dakota, such is not the case. True, there is a sweeping northward of the springtime development of the colonies of bees and the blooming of the first nectar and pollen-bearing plants of the season, but the honey harvest does not come until the bloom period of the plant or plants that furnish the main honey flow for the locality. In many localities the entire crop of surplus honey is gathered within a few weeks during the blooming period of some important nectar-bearing plant, the other nectar-bearing plants of the region being but minor sources. If one were to attempt to follow the honey harvest northward as the harvest hands of the Great Plains follow the wheat harvest, there would be a surprising amount of dodging about, sometimes north and sometimes south, as the season advances. One of the first things the beginner should learn, if possible, about his location is when to expect the main honey flow or honey flows of the season. This can usually be learned from some established beekeeper in the locality. In general, the bulk of the honey is gathered in April and May in the South, May and June in the middle latitudes; June, July, and in some places in August and September in the far North. It may come in March and April from orange blossoms in California, mesquite in Texas or tupelo in Florida; in April and May from gallberry in the South Atlantic states, the tulip tree in Virginia and Maryland, mountain sage in California or saw palmetto in Florida; in June and July from wild raspberry in New York, Michigan and Ontario, white and alsike clover in the great clover region of northeastern United States and eastern Canada, sourwood in the Carolinas, basswood in the North, sweet clover in the great sweet clover belt of the Missouri River region, alfalfa and sweet clover in the irrigated portions of the West or cotton in the South; in August from willowherb or fireweed in Canada and a few of the adjacent border states, buckwheat in New York and Pennsylvania; and in August and September from fall flowers in widely scattered localities. These are only a few of the important sources of nectar.

The Building-up Period.

Whatever the source of the main honey flow the amount of surplus that can be stored depends upon the amount of brood reared during the preceding six or eight weeks, since, other things being equal, the amount of surplus is proportional to the number of workers on the job during the honey flow. Weak colonies usually are not able to store much if any surplus.

Throughout the greater part of the United States and Canada, this month is the most important part of the building-up period. Wherever the honey flow comes on in June, the most important thing this month is extensive brood-rearing. If any thing happens to hinder brood-rearing in any way now, the possible number of young workers for June and July will be proportionately reduced. Many beginners and even some professional beekeepers fail to secure good crops of honey because of some error in the management this month.

Greatest Danger from Lack of Stores.

Often the bees curtail brood-rearing because their supply of honey runs low. In order to rear the great horde of workers necessary for best results when the honey flow comes it is necessary that the bees be able to gather plenty of nectar and pollen from early spring flowers; that they have a large supply of honey stored in the hives or that they be fed about a quart of sugar syrup, made of equal parts of sugar and water, either daily or larger amounts of thicker syrup at longer intervals. In most localities the bees are able to gather all the pollen they need for spring brood-rearing, though in a few places brood-rearing is hindered from lack of pollen.

The safest condition for this important building-up period, so far as food is concerned, is an abundance of honey in the hives. Then, when a cold or rainy spell or a dearth of nectar comes, the bees can go ahead full speed with their brood-rearing. It is surprising how much honey is used for the heavy brood-rearing of spring. Sometimes frames filled with honey will be emptied within a few days and the combs filled with brood. Apparently it requires nearly a frame of honey to make a frame of brood, and, since strong colonies should have from eight to twelve frames fairly well filled with brood before the honey flow begins, the importance of an abundance of stores at this time can be appreciated.

There is an old saying in the clover region that, if the early flowers, such as maples, fruit bloom and dandelion, yield well, the honey crop from clover will be good; but, if the early flowers fail, the honey crop from clover will be poor. The up-to-date beekeeper refuses to surrender his chances of a honey crop when the early flowers fail, but feeds his bees lavishly when necessary during the building-up period. If beginners will see that each of their colonies has, at all times from now until the beginning of the honey flow, not less than 10 to 15 pounds of honey (enough to fill completely two or three standard frames), there should be no question about their building up to great strength in time for the honey flow, so far as the food supply is concerned. If frames of honey are not at hand, the bees should be fed unless they are gathering plenty from the flowers.

In order to learn what he can about the rapid consumption of stores when brood-rearing is carried on extensively, the beginner will do well to look into the hive about once a week until the honey flow begins, to note the amount of stores on hand.

When a Second Story Is Needed.

In many cases brood-rearing is hindered, just when the colonies should be raising the most, by a lack of room in the brood-chamber. Colonies that have wintered well, which have a good queen and plenty of food, often need more room before the honey flow begins, than a single standard 10-frame brood-chamber.

If extracted honey is to be produced, a second story should be given to all strong colonies this month, even in the far North, and the queen should be permitted free range through both stories. If this extra story contains a few frames of honey, all the better. If combs are not at hand for this second story, frames filled with full sheets of foundation should be used, but these should not be given until the bees begin gathering enough nectar to cause them to build out the comb. When they begin to whiten the upper portion of the brood-combs with new wax, they will usually work well on the foundation. When foundation is used in the upper story, two combs of brood should be transferred to the upper story and placed in the middle, two frames of foundation being put below to fill the space, one on each side, just beyond the last comb of brood. As soon as the bees draw out the foundation in the frames adjacent to the combs of brood in the upper story, they should be exchanged with a frame on which the bees have done no work, repeating this until all are built out. If the queen now establishes herself in the upper story, all the better; but, after she has been upstairs about three weeks, she should be put below again and confined there by a queen-excluder. At this time the upper story should be well filled with brood and honey; and, if at the beginning of the main honey flow, a third story should be given, this time lifting some of the combs of brood into the third story if foundation is used.

If comb honey is to be produced the brood should be concentrated, and the second story should not be given unless needed to give enough room for brood-rearing, for the two-story hives must be reduced to one-story when the comb-honey supers are given at the beginning of the main honey flow. But even for comb honey, many colonies will need a second story several weeks before the main honey flow. In addition to furnishing room to rear more workers for the harvest, this extra room at this time goes a long way toward preventing swarming.

Sometimes the bees gather so much nectar from early sources that single-story hives become crowded with honey, thus restricting the work of the queen; but often such crowding is for a short time only, and the honey is used up rapidly as soon as the supply of nectar is reduced.

Sometimes colonies fail to rear enough workers for the harvest because the queen is old or worthless. While this can be remedied by purchasing a queen from the South to give to the colony in place of the old queen, it is scarcely advisable for beginners to do this; for, by the time the failing queen is discovered, it is often too late to secure another in time to build the colony up for the honey flow unless the main honey flow does not begin until July or August.

The two things of outstanding importance before the main honey flow are to see that the bees have a superabundance of food every minute of the time and that they have all the room they can use for brood-rearing. If the bees are not gathering more than they consume, they should be fed liberally unless they have 10 or 15 pounds on hand, and a little before more room is needed a second story should be given.

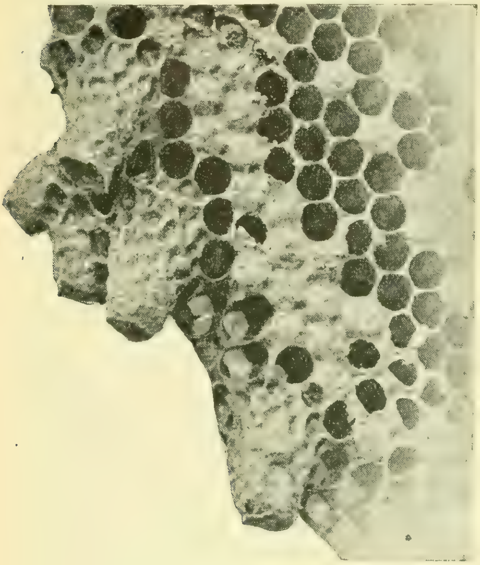
The Swarming Problem.

When the hives first become crowded with young bees, which in strong colonies sometimes emerge from their cells at the rate of about 3000 per day, swarming may be expected. In some parts of the South bees sometimes swarm in March and April; but in the North the swarming season comes in May and June, often extending into July.

Before the invention of the movable-frame hive, swarming was considered desirable, for honey was then obtained by killing some of the heaviest colonies in the fall; but, in modern beekeeping, swarming in some localities is one of the most difficult problems with which the beekeeper has to deal. If colonies are permitted to divide their working force by swarming shortly before, at the beginning of or during the main honey flow, the amount of honey secured is greatly reduced. Sometimes the honey flow is so short that it passes by before either the swarm or parent colony recovers sufficient strength to store surplus honey. It is only where the swarming season comes a month or two before the main honey flow, so that both divisions can again become strong in time for the honey flow, that swarming can be considered desirable.

The Story of Swarming Briefly Told.

In preparation for swarming, the bees build several queen-cells, which can easily be seen usually along the lower edge of the brood combs. These are built singly or in clusters of two or three cells with the opening downward. They somewhat resemble a peanut shell in appearance. About the time the cells are sealed (about eight days after the egg was laid) the swarm issues, accompanied by the old queen. About eight days later the young queens begin to emerge, and, if not prevented, several after-swarms will issue, one coming out every day or two until the colony is so depleted that there are no longer enough bees to divide up among the young queens. Finally all but one of the remaining young queens are killed, the surviving one to become the new mother of the colony. If the bees are permitted to carry out this program completely, the splendid, strong colonies are ruined, so far as gathering an immediate honey crop is concerned.



The queen-cells are the large ones at the left, somewhat resembling peanuts.

How to Prevent Loss from Swarming.

If a swarm issues when plenty of room is given as previously described, the working force can be kept together, the work in the supers continued without interruption and after-swarming prevented by the following procedure: When a swarm issues look for the queen (if she has been clipped as advised last month) on the ground in front of the hive. When she is found put her into a small wire-cloth cage or queen-catcher and lay the cage with the confined queen in the shade. Move the hive from its stand, turning its entrance away from its former position. Place a new hive where the old one stood, having frames with full sheets of foundation, and, if available, one empty comb. Transfer the supers from the old hive to the new (if extracting-supers, none containing brood should be transferred), put the covers on both hives, thrust the cage containing the queen part way into the entrance of the new hive and wait for the swarm to return and enter the new hive. They may return within a few minutes without clustering or they may cluster before returning. The old hive should be set far enough away so none of the returning bees will enter it, or covered with a cloth until the swarm has returned. When most of the bees have entered the new hive the queen should be released, care being taken that she goes into the hive.

If the queen is not clipped the hives should be arranged in the same way while the swarm is out; then when the bees have clustered the cluster can be shaken into a basket or light box, carried to the new hive and the bees poured out at the entrance, care being taken to start some of them into the entrance, when the rest will follow. If a queen and drone trap is used instead of clipping the queen, the procedure is similar to that for the clipped queen.

To Prevent After-swarming.

After the swarm has entered the hive and quieted down, the old hive should be moved back close beside the new one, but with its entrance turned away about a foot from the new hive. A day or two later it should be turned so the two hives are side by side, with their entrances close together.

On the seventh day after the swarm issued, choosing a time when the bees are working freely in the fields, preferably early in the afternoon if the day is fine, just when the most bees are flying in front of the hive, the old hive should be picked up and moved away to a new location for increase. This moving should be done so carefully that the bees are not disturbed so that none of them will note the change in their location when they go to the fields; and it should not be located close to other hives where returnings bees from another colony might enter it by mistake. When this is done the parent colony is so depleted of its bees just at the time the young queens are ready to emerge that it is too weak to send out an after-swarm, the field bees on returning all joining the colony on the old stand. When swarming occurs at the beginning of or during the honey flow, this plan is especially desirable. In this case the parent colony usually does not produce any surplus honey, but work in the supers on the new hives goes on without interruption. Colonies managed in this way usually produce as much honey as those of equal strength which do not swarm, and sometimes even more; for recently hived swarms, if satisfied, work with greater energy than other colonies.

OUR HOMES

A. I. ROOT

Let your light so shine before men that they may see your good works, and glorify your Father which is in heaven.—Matt. 5:16.

The effectual fervent prayer of a righteous man availeth much.—James 5:16.

Her price is far above rubies.—Prov. 31:10.

THERE are two more remarkable answers to prayer; or at least they are remarkable and greatly encouraging *to me.* One Sunday evening, just as I had come in on foot from my Abbeville Sunday school, five miles away, an old friend said to me as follows:

"Mr. Root, a saloon is to be opened up bright and early tomorrow morning at the center of York. The man has got his wet goods in boxes, and is ready to put them on the shelves; and if anything is going to be done to stop it, it must be done this Sunday night; and I do not know of any one who will tackle such a disagreeable job unless it is you."

I was tired and hungry, and it was already snowing, and nearly dark. I got a hasty lunch; and with a prayer for strength, and wisdom as well, I started out with my umbrella. It was a trip of four miles, and there was so much snow on the railroad track that I had hard work to keep my feet on the ties. There was only one man in the little town of York with whom I was well acquainted, and he was a notorious skeptic. I called at his home, and he almost immediately began a tirade against Christians in general. He said something like this:

"Mr. Root, you Christians meet together and pass resolutions, perhaps appoint committees, and pray about it, and that is the last of it. You never *do* anything."

I listened as long as I could stand it, and then I said:

"There may be some truth in what you say, Mr. Van Orman; but how about you infidels? What do *you* do?"

"Oh!" replied he, "we go right to work and *do* things without all that folderol and rigmarole."

By the way, it occurs to me just here that my old friend, Rev. A. T. Reed, the boy preacher, once astonished his audience by saying in his opening prayer something like this:

"O Lord, we thank thee for our enemies, because they oftentimes tell us of our faults which our friends, especially if they are intimate friends, rarely do."

I have often thought of it since then.

After what I said to Mr. Van Orman, and he had replied, I took it up as follows:

"Mr. Van Orman, I am very glad indeed to have you tell me how unbelievers work, for you and I are going straight, this blessed minute, to do what we can to prevent Mr. ——— from opening up here in your quiet little town such a thing as has never been known."

The above had the effect of completely turning the tables. He replied:

"O Mr. Root! I am sure you will do very much better if you go alone. Somehow it is out of my line. You are just the man for it."

He continued to object; but I declared that, after what he had said, he was going up to where the saloon was to be started and introduce me, even if I had to take him by main strength. I got him up to the door, but I had to do the rapping; and when the man made his appearance I asked Mr. Van Orman to introduce me. We both went in and had quite a talk. The man and his wife, with two or three children, were present. They both resented my interfering, and all that I could do did not seem to change their opinions a particle. The man said he had got to do something to get the means to educate his children, and there seemed to be no other opening just then. Just think of it, friends—opening up a saloon as a means of educating the little ones of the household! My skeptical friend had but little to say, and I was about to give it up; but before leaving I said I would like to have them all kneel with me including Mr. Van Orman, while I asked the good Lord to guide us in the matter. My prayer was short, but I think it was something like this:

"O Lord, thou knowest how thy servant has labored to make this father and mother consider well the step they are about to take. Thou knowest how he seems to have failed entirely. Now may the Holy Spirit do what I have utterly failed to do, and make this father and mother realize what may be the effect in these growing children if the parents go on as they propose to do."

What do you suppose happened? As we arose from kneeling the mother was shedding tears. She stood up to her full height, and raising her hand, she pointed to her husband and said, "Sir, you know how I have objected to this whole undertaking from beginning to end; but you have coaxed and wheedled me into giving a reluctant consent. But I have changed my mind. The minute you open that store and begin selling that stuff to whosoever calls for it, that minute you and I cease to be *husband and wife.*"

I am afraid, dear friends, that I laughed at the outcome. The husband turned on me and said, "Mr. Root, you pretend to be a Christian, and yet you come into my home uninvited, and certainly not wanted, and make trouble between me and my wife. What sort of Christianity do you call that?''

Of course no separation followed. When the husband asked me what he was to do, I told him to send his stock of liquors back, with the explanation that his wife objected to his going into the business, adding that there would be no trouble.

By the way, friends, I got a glimpse from this incident of years ago of what might happen when the *mothers* of our land have something to say about making and enforcing our laws, especially those laws pertaining to the protection of our little ones. I have seen in my day many women that the world would call handsome; but I do not remember any other woman who impressed me as did that slender young wife as she with tears in her eyes raised her hand and issued what we might call an ''emancipation proclamation'' from the saloon business.

How about my skeptical friend who boasted that infidels go to work and *do* things without praying or singing hymns? Just as we got out of the door he was fairly bubbling over with enthusiasm at *my* method of doing missionary work. He said, almost in the language of my good old friend Daniel Wells, who had the jewelry store, something like this:

''Mr. Root, if this is religion, I will take stock in it, and I have not a word to say against it.''*

Right along in line with this, as illustrating what prayer may do when everything else fails, the following comes in well here. Some seven miles from my home there was a market gardener who worked hard and raised beautiful fruit and vegetables. But he was an intemperate man. Again and again he would load up a great wagon-rack of stuff and go to some town to sell it; and when the money was all in his pocket he would go into a saloon where the inmates would succeed in getting every dollar that his poor family needed for the necessaries of life. Why is it that a man will toil early and late for weeks and months, and then let the saloon keepers rob him of his hard earnings? I happened to know that this man had gone to Medina with a load of stuff, including choice grapes, peaches and apples that he had worked hard to produce, and that once more he was obliged to confess to his wife and children that drink had taken it all. One of my mission Sunday schools was only a few miles from his home. I think I owned a horse and buggy of my own about that time, and so I drove over after Sunday school. As soon as I made known my errand the whole family resented it. They felt humiliated to have one who was almost an entire stranger call on them to get particulars in regard to it. The wife especially seemed pained and hurt, and I could get scarcely a word from her. As a last resort I asked if they would kneel with me in prayer. My prayer was something like the other one, and I asked the dear Lord to bless the outcome of my visit, even though it might have been ill-timed. To tell the truth, I had so little faith that I felt a great deal discouraged, and resolved I would not undertake such a task again. But it was one of my happy surprises, as I arose from my knees, to find both man and wife had been crying. The good woman broke down, and amid sobs told me of her troubles. Oh, what a woeful story it was! He had usually taken his crops to Cleveland; but the saloon-keepers had plucked him there so much that she persuaded him to go to Medina, but there the result seemed to be even worse. He finally began to confess; and before he finished he told me the whole story. After our four or five saloons in Medina had got him well ''loaded'' up they began borrowing money of him, and he lent it right and left, without taking a scrap of paper nor even knowing where it went. Finally, as he talked it over, he said something as follows:

''Mr. Root, the grand jury is now in session in Medina. I will go down bright and early tomorrow morning, and tell the story as I have told it to you.''

He kept this promise. In the mean time one of the saloon-keepers who had taken the greater part of the forty or fifty dollars the man had received for his crop came forward; and after I had talked with him he owned up, but explained it by saying that he knew the poor man would lose every cent he had, and so he took it. He said he had planned to return it the next time he met him when he was sober. The result of that brief prayer was the breaking up of the saloon business in our town. Mr. Barber had caught every one of them red-handed, so to speak. It was not long before I received an intimation that, when I was starting Sunday schools and sticking to the Sunday school business, I was probably all right; but when I started out to make raids like the one mentioned above, on Sunday nights, I was away off, and I would get into a lot of trouble unless I ''attended to my own business'' and stopped meddling with things outside my province. The man who gave me the warning died only a short time ago; but before he died he came to me and said, ''Mr. Root, years ago I did not agree with you; but since that time great changes have taken place. I want to say to you before I die that you were right and I was wrong.''

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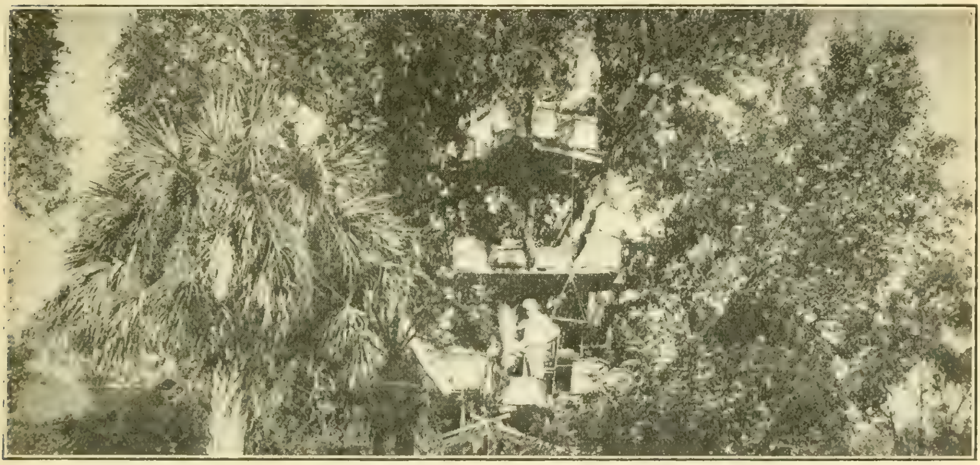
* My good friends, let us stop and consider the above a little. In perhaps less than one hour of strenuous work I stopped the opening of saloons in that little town. There had never been one there before, and there has never been one there since. Not only the two or three children belonging to this man and wife, but the whole community for miles around, were saved from—who can tell what? Just that one little short prayer did it all. And what is to hinder doing this sort of prohibition work right here in our own land? And then consider my skeptical friend. I do not know whether he turned over a new leaf or not; but I was able to give him a demonstration of the power of prayer, which he had been ridiculing all his life, and I am sure it made him a better man if nothing more.

The effectual fervent prayer of a righteous man availeth much.—James 5:16.

An ''Apiary'' in a Big Live Oak Tree Down in Florida.

''Bye-o-bye baby up in the tree top,
  When the wind blows, the cradle will rock;
When the bough bends, the cradle will fall,
  And down goes bye-o-bye, baby and all.''

Dr. Moore of Manatee, Florida, has the first apiary ''up in the tree top'' I ever heard of (see picture). There are ten hives on three platforms of different heights. So securely has he bolted everything to the solid oak that the ''tropical hurricane'' (see page 780, December issue) did not harm a thing, and the doctor himself was up in the tree during the storm. The windmill on top is nearly 50 feet high and the platforms for the hives are something like 20, 30 and 40 feet up. There is a square board or platform large enough to carry a hive suspended by a rope at each corner, and this can be hauled by rope and pulley level with each platform. A windlass winds up the rope, and the Doctor, even if he is over 60, manipulates it all alone without any trouble. No big crop of honey has been secured so far, as we have had two rather poor seasons since the hives have been installed.



An apiary in a tree top.

RED OAK FARMERS TURN THE TABLES.

Make Good Profit on ''High Priced'' Hubam Clover Seed.

Special to The Nonpareil.

Red Oak, Ia., Jan. 29.—Edward and Gordon Hays, real estate men and farmers, were the laughing stock of many farmers who visited their office last winter and were shown a little sack of Hubam annual sweet clover seed for which they had paid the Henry Field seed house at Shenandoah $150. The yield from this $150 sack has turned the tables on the farmer friends who made fun of their buy. In the spring the canning factory bought 10 pounds of the seed at $10 a pound with which they seeded 10 acres on their Mills County farm. This experiment proved a failure because of the fact that the seed was drilled in with acid phosphate, which killed the seed. It was then late, but they decided to make another effort and seeded 20 acres on the M. O. Allen farm southeast of Red Oak. From this planting they got a good stand on six acres and sold their seed from this crop recently for about $1000. The Hays brothers planted the remainder of the seed, getting a good stand and yield. On Wednesday they sold a truck load of the clover seed from their crop, for which they received about $1,750, and have about $1,000 worth of seed still left, thus making about $2,750 for the crop they received from a part of the $150 sack of seed on 20 acres of land.—From Field's Seed Sense, March 22, 1922.

COOKING BY ELECTRICITY.

A Wonderful Revolution in the Whole Business of Preparing our ''Daily Bread.''

I have for years past been appalled at the awful waste of heat, in all the appliances we use for cooking. A little heat reaches the food, but a far greater part goes up the chimney, or out in every direction into the air. With the new invention you don't light a match, you don't ''burn'' anything. A little heat, just enough to do the work, is sent right to the spot, then ''bottled up'' and kept there, on the principle of the ''fireless cooker.'' The current from any common lamp socket for only 10 or 15 minutes (at a cost of a cent or two, according to what you have to pay for current) will cook many simple dishes, and keep them hot until meal time. There is no boiling over nor burning, for just as soon as the cooking is done, the new invention snaps off the current. The electric windmill works it beautifully.

For price and description write The Wm. Campbell Co., Detroit, Mich.

Classified Advertisements

Notices will be inserted in these classified columns for 50c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column, or we will not be responsible for errors. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontined when they are in good standing.)

R. V. Stearns, F. E. Schriver, H. G. Quirin, G. O. Pharr, M. L. Nisbet, O. E. Milam, John J. Lewis, J. L. Leath, E. E. Lawrence, Allen Latham, R. S. Knight, Geo. A. Hummer & Sons, F. C. Gentz, John S. Field, R. V. Cox, P. C. Chadwick, J. D. Beals, Allenville Apiaries, Bruce Anderson, Stiles Bee Supply Co., F. W. Summerfield, J. E. Wing, Edw. A. Winkler, Electric Wheel Co., Kitselman Bros.

HONEY AND WAX FOR SALE.

FOR SALE—White tupelo honey, any quantity. Tupelo Honey Co., Apalachicola, Fla.

FOR SALE—Clover, amber and buckwheat honey, 60-lb. cans and 5 and 10-lb. pails. C. J. Baldridge, Kendaia, N. Y.

FOR SALE—25 tons fine extracted white clover honey at 12c. Comb honey prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

CLA-FO-NY QUALITY buckwheat honey (liquid or crystal), 5-lb. pails, 65c, 15 to case, 2 60-lb. cans, $12. Clarence Foote, Delanson, N. Y.

FOR SALE—12,000 lbs. of choice white clover honey, well ripened, put up in new 5 and 10 lb. pails. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gal. barrels. Samples and price on request. A. I. Root Co., 23 Leonard St., New York City.

FOR SALE—Extra-choice extracted white clover honey, put up in new 60-lb. cans and 5-lb. pails. Sample 20c, same to apply on first order. David Running, Filion, Mich.

HONEY FOR SALE—In 60-lb. tins, water-white orange, 15c; white sage, 13c; extra L. A. sage, 11c; N. Y. State buckwheat, 10c, for immediate shipment from New York. Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE—100 cases, 6 10-lb. pails each and 25 cases, 12 5-lb. pails each (60 lbs. net) of choice white alfalfa-sweet clover honey at $6.60 per case in 10-case lots and upwards only. Sample, 25c. All f. o. b. Montrose, Colo. H. R. Fisher.

HONEY AND WAX WANTED.

WANTED—Honey, section, bulk comb and extracted. Elton Warner, Asheville, N. C.

BEESWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

WANTED—Beeswax. We are paying 1c and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address, so we can identify it immediately upon arrival, and make prompt remittance. The A. I. Root Co., Medina, Ohio.

FOR SALE.

HONEY LABELS—New design. Catalog free. Eastern Label Co., Clintonville, Conn.

YOU will make no mistake in ordering your comb foundation of E. S. Robinson, Mayville. N. Y.

FOR SALE—20 lbs. light brood foundation for Mod. Dadant super frames, 70c per lb. Weber Bros., Wathena, Kans.

NOVICE extractor, steam foundation-fastener and bees. What do you need? Paul N. Van Horn, West Falls Church, Va.

FOR SALE — "SUPERIOR" FOUNDATION. "quality unexcelled." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

FOR SALE—Medium brood foundation mill. Fair condition, 9-in. rolls. Price, $50.00. The Henseler Apiaries, Marshfield, Wis.

PORTER BEE-ESCAPES save honey, time and money. Great labor-savers. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

ROOT'S bee goods at factory prices. Everything for the beekeeper. Ask for catalog. S. M. Wilkes & Co., W. E. Tribbett, Asst. Mgr., Staunton, Va.

FOR SALE—Good second-hand 60-lb. cans, two cans to case, boxed, at 60c per case, f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., Cincinnati, Ohio.

FOR SALE—Bargain in beehives, owing to death of owner. Large amount in flat. Honey cans, cases, etc. 165 S. Forest Ave., River Forest, Ill. Phone River Forest 2879M.

FOR SALE—One No. 5 Novice extractor, pockets 9⅝ x 16 in., diameter, 17 in. Used one season. Is good as new. Sold reasonable. Write to Lawrence G. Springer, Ossian, Ind.

FOR SALE—25 cases of new 60-lb. cans, two cans in case, $1.00 per case. Also 50 cases of picked seconds in good cases. No junk. 70c per case. Ray C. Wilcox, Odessa, N. Y.

FOR SALE—11 ten-frame Danzenbaker supers, used two years, newly painted, fences and section-holders new, $1.85 each; 5 same except section-holders are somewhat discolored but never used, $1.75 each. King's Apiaries, McArthur, Ohio.

FOR SALE—To further reduce our large equipment, we offer a full line of NEW and SLIGHTLY USED Jumbo and standard Langstroth bee supplies of Root manufacture. We also offer full colonies of bees in Jumbo and Langstroth hives. Complete list free. We can save you real money. No disease. The Hofmann Apiaries, Janesville, Minn.

FOR SALE—Giving up bees. 58 hives, 41 painted, 17 unpainted, K. D., never used; 39 telescope covers; 37 super covers; 100 assembled frames; 140 drawn combs; 5 bee-boards; 5 supers, painted; 48 reversible bottom-boards, 14 painted, 34 unpainted; 200 Hoffman short bar frames, not assembled; 1 two-frame Cowan extractor, 15B; 20 Boardman entrance feeders; 10-frame equipment, used a few seasons. Best offer takes lot. Equipment as good as new. A. H. Eisenhardt, Jefferson, N. Y.

WANTS AND EXCHANGE.

ROYAL typewriter, $65.00. Will trade for honey, queens or offer. E. A. Harris, Albany, Ala.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

WANTED—Barnes beehive machine and 2-H. P. engine. Will exchange package bees for same. Tupelo Honey Co., Apalachicola, Fla.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa, Council Bluffs, Iowa.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

WANTED—Partner with some cash, or manager for an established bee business of about 1200 colonies in three apiaries, well located, convenient and healthy. Reference exchanged. W. B. Gehrels, Puntarenas, Box 27, Costa Rica.

WANTED—To exchange for queens of a good strain, or will sell cheap, 65 ten-frame and 44 eight-frame Root metal-roofed double covers, slightly used but good as new, no disease. Best offer by July 15 gets them. T. L. Beasley, Claxton, Georgia.

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1922 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Ill.

SEEDS AND PLANTS.

"We will not guarantee the purity of any seed advertised nor any nursery stock, as nurserymen ordinarily will not do this themselves; but any seedman or nurseryman advertising in our columns will have given us excellent references in advance, and our readers may consider this fact in their favor."—From Our Guarantee and Advertising Conditions.

HUBAM CLOVER SEED—Guaranteed purity, grown by ourselves; certificate of purity and germination furnished; 1 lb., $1.00; 5 lbs., $4.50; 25 lbs., $21.25. Delivered prices. Write The Foster Honey Company, Boulder, Colo.

BEES AND QUEENS.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

TRY ACHORD'S BEES and QUEENS. Price list by return mail. W. D. Achord, Fitzpatrick, Ala.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

WHEN it's GOLDEN, it's PHELPS. C. W. Phelps & Son, Binghamton, N. Y.

NOW booking orders for Miller's strain Italian queens. I. F. Miller, Brookville, Pa., 183 Valley.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

FOR SALE—Hardy Italian queens. Prices on request. The Brookside Apiaries, Bennington, Neb.

QUEENS—One untested queen, $1.50; 6, $7.50; 12, $14.00; 50, $55.00; 100, $100. Tested queens, $2.50. Wells D. Rose, Sunnyside, Wash.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

SPECIAL prices on queens and bees. See my ad page 288. Frank Bornhoffer, Mt. Washington, Ohio.

PINARD'S quality brand queens are the convincing kind. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR SALE—20 colonies of bees, gentle and good workers. Price reasonable. A. Nigabower, Ilion, N. Y.

BOOKING orders now for early queens and package bees. Write for prices. Sarasota Bee Co., Sarasota, Fla.

FOR package bees and Italian queens, write Jones & Stevenson, Akers, La. Safe arrival and satisfaction guaranteed.

FOR SALE—Carload bees, nuclei, pound packages, full colonies. See our ad elsewhere. The Stover Apiaries, Mayhew, Miss.

PHELPS GOLDEN QUEENS will please you. Mated, $2.00; 6, $10.00; or $18.00 a doz. C. W. Phelps & Son, Binghamton, N. Y.

PRITCHARD QUEENS are the result of years of careful breeding and selection. See ad page 343. Arlie Pritchard, Medina, Ohio.

BUSINESS-FIRST queens offer you their illuminated descriptive handbook with prices, select untested, $1.50. M. F. Perry, Bradentown, Fla.

FOR SALE—Golden Italian queens. Tested queens, $2.50; untested, $1.25. Queens ready June 1. J. F. Michael, Winchester, R. D. No. 1, Ind.

PACKAGE BEES—$1.50 per pound. Untested Italian or Carniolan queens, $1.25 each. Circular free. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

QUEENS.—Select three-band Italians, by return mail, $1.25 each, $13.00 per dozen. Write for descriptive circular. Hardin S. Foster, Columbia, Tenn.

TRY Pinard. He's the one that breeds for quality. Root's strain. Attractive prices. See larger ad. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR SALE—Golden Italian queens, untested, $1.15 each; 6 for $6.50; 12 or more, $1.00. Safe arrival guaranteed. Sam Hinshaw, Randleman, N. Car.

FOR SALE—Early package bees, nuclei and queens. We handle 1800 colonies. Shipping season March 1 to June 1. Loveitt Honey Co., Phoenix, Ariz.

MERRILL'S bright three-banded Italian queens will please you. Mated and laying, $1.00; 6, $5.25 or $10.00 a dozen. G. H. Merrill, R. D. No. 5, Greenville, S. Car.

FOR SALE—Bright Italian queens, 1, $1.25; 12, $12.00. Write for prices of nuclei and pound packages. Safe arrival guaranteed. T. J. Talley, Greenville, R. D. No. 3, Ala.

WE ARE booking orders now for spring delivery for the famous "Colorado Queens." Send your order early so as to be sure to get your queens. C. I. Goodridge, Wheatridge, Colo.

FOR SALE—Three-band Italian queens, select untested, $1.00 each; $9.00 per doz. 2-lb. package with queen, $5.00. Satisfaction guaranteed. W. T. Perdue & Sons, Fort Deposit, Ala.

BEES BY THE POUND — Also QUEENS. Booking orders now. FREE circulars giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas, E. B. Ault, Prop.

1500 NUCLEI for May and June. Simmons queens ready now. Fairmount Apiary, Livingston, N. Y.

FOR SALE—3-frame nuclei with tested Italian queen, $5.50. Dr. Chas. F. Briscoe, A. & M. College, Miss.

FOR SALE—Three swarms of bees, standard hives with supers and supplies—cheap. Davis, 419 Third Ave., Haddon Heights, N. J.

FOR SALE—40 hives of bees, 20 empty hives. 43 supers and fittings, all 10-frame standard Root goods in A1 shape. Quote me price. W. J. McGarr, Millen, Ga.

BOOKED to capacity on early May orders. Heavy discounts on introduced laying-enroute-to-you queens with frames, and pounds after May 25. Jes Dalton, Bordelonville, La.

FOR SALE—Three-banded Italian queens, one untested, $1.25; 12, $12.00; tested, $1.75; 12, $18.00; 2-frame nuclei with untested queen, $4.50. Jul Buegeler, New Ulm, Texas.

FOR bees, queens, nuclei, packages, see larger ad this issue. Annual Hubam sweet clover seed, guaranteed and scarified, delivered for $1.00 per pound. Curd Walker, Scotts Sta., Ala.

FOR SALE—A few good strong colonies of Italian bees in May, in 10-frame hive-bodies. All queens clipped and one year old in August. A. W. Lindsay, 438 Mt. Vernon Ave., Detroit, Mich.

FOR SALE—Three-banded Italian queens, untested, $1.50 each; 6, $8.00. Ready June 1. Satisfaction guaranteed. Chas. W. Zweily, Willow Springs, Ill.

ELTON WARNER'S QUALITY QUEENS—Progeny of his famous Porto Rican breeding stock. Write for illustrated price list. Elton Warner Apiaries, Asheville, N. C.

TRY my Caucasian or Italian 3-frame nuclei at $6.00 each with tested queen. Tested queens. $1.50; untested, $1.25, of either kind. No disease. Peter Schaffhouser, Havelock, N. Car.

DEPENDABLE QUEENS—Golden or three-banded, after June 1: 1, $1.50; 6, $8.00; 12, $15. Safe arrival and satisfaction guaranteed. Send for circular. Ross B. Scott, La Grange, Ind.

DO IT NOW—Send for descriptive booklet. prices and testimonials of my improved strain of Italian queens. Pure mating and safe arrival guaranteed. Write J. B. Hollopeter, Rockton, Pa.

FOR SALE—Golden Italian queens ready May 1. 1 queen, $1.25; 6, $6.50; 12, $12.00; 100. $85.00. Virgins, 50c each. Write for prices of nuclei. W. W. Talley, Greenville, R. D. No. 4, Ala.

LATHAM'S QUEENS are well-bred Italians. They will suit you. "She-suits-me" untested queens from May 15 to June 15, $2.00 each, 10 or more, $1.75 each. Allen Latham, Norwichtown, Conn.

HIGH-GRADE ITALIAN QUEENS a specialty. Order early. Prompt shipment. Laying, $1.50; tested, $2.50. Day-old, with introduction guaranteed in the U. S., 75c. James McKee, Riverside, Calif.

THREE pounds of bees, shipped on a Hoffman frame of brood and honey, with an untested Italian queen for $6.00. No disease, satisfaction and safe arrival guaranteed. 25% books your order for April and May shipments. E. J. Beridon, Jr., Mansura, La.

Two-pound package bees with untested Italian queen, $5.00; 3 lbs., $7.00. Safe delivery guaranteed. C. H. Cobb, Belleville, Ark.

FOR SALE—Golden Italian queens, untested, $1.15 each; 6, $6.50; 12 or more, $1.00 each; select untested, $1.60; 6 or more, $1.50 each. Safe arrival. Hazel V. Bonkemeyer, R. D. No. 2, Randleman, N. C.

FOR SALE—Leather-colored Italian queens. tested, until June 1, $2.50, after, $2.00. Untested. $1.25; 12, $13.00. ROOT'S GOODS, ROOT'S PRICES. A. W. Yates, 15 Chapman St., Hartford. Conn.

FOR SALE—Three-banded Italian queens, 1. $1.00; 6, $5.00; 12, $9.00; 100, $70.00, after May 20. We ship only the best. Safe arrival and satisfaction guaranteed. W. C. Smith & Co., Calhoun, Ala.

FOR SALE—40 colonies of pure-bred Italian bees in good 8-frame standard hives. Queens from Root, Moore and Achord. At $12.00 per colony. Will ship in lots to suit purchaser. H. J. Avery, Katonah, N. Y.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, $1.00 each; $10.00 per dozen; $75 per 100. Pure mating, safe arrival and satisfaction guaranteed.

FOR SALE—30 colonies bees in 10-frame hives spaced 9 frames to the hive. Shipment to be made about June 1 as soon as unpacked. Write for supply catalog and price on larger orders. F. J. Rettig, Wabash, Ind.

MY 1922 queens and bees for sale, the big yellow kind, none better. Satisfaction guaranteed or money back. Price, untested, $1.00 each; $10.00 per doz., or $80.00 per 100. Tested, $1.75. E. F. Day, Honoraville, Ala.

FOR SALE—Golden Italian queens, untested about May 1, $1.15; 6 for $6.50; 12 or more. $1.00 each; tested, $2.00; select tested, $3.00. No disease. No bees for sale. D. T. Gaster, Randleman, R. D. No. 2, N. C.

FOR CANADIAN SHIPMENTS by return mail I have special parcel post cages for package bees. 1-lb., $4.25; 1½-lb., $4.75, including queen delivered to your address. Safe arrival and satisfaction. Jasper Knight, Hayneville, Ala.

FOR SALE—Unsurpassed Italian queens, ready June 1. Untested, 1, $1.25; 6, $7.00; 12, $12.50; 50, $50.00; 100, $95.00. Tested, 1, $2.00; 6, $11.00. My queens are actually laying before they are sent out. J. D. Harrah, Freewater, Oregon.

COLORADO HEADQUARTERS for QUEENS—Northern-bred leather-colored three-band Italians. Safe arrival guaranteed. Booking orders now for June 1st delivery. Send for circular and price list. Loveland Honey & Mercantile Co., Loveland, Colo.

ORDERS booked now for spring delivery, 3-frame nucleus and queen, $6.50; select tested, $7.50; Dr. Miller's strain. No pound packages. Low express rates and quick transit north. 10% with order. S. G. Crocker, Jr., Roland Park, Baltimore, Md.

FOR SALE—DEPENDABLE GOLDEN ITALIAN QUEENS. Add beauty to your bee quality. Virgins, 60c; 5 for $2.50; untested, $1.00; 6 for $5.00; select untested, $1.50; 6 for $6.50; tested. $2.50; 5 for $10.00; selected, $3.00; breeders. $5.00. Safe arrival and quality guaranteed. Foul brood has never been in this section. S. H. Hailey. Pinson, Tenn.

CAN furnish promptly 2-frame nuclei with queen, $3.50; 3-frame nuclei with queen, $4.50; 4-frame nuclei with queen, $5.50. Rosedale Apiaries, J. B. Marshall and H. P. LeBlanc, Props., R. F. D., No. 2, Alexandria, La.

TWO-POUND PACKAGES with queens, $4.75 each; 10 or more, $4.50 each; 25 or more, $4.25 each; discounts on pound packages after May 25. No disease, safe arrival and satisfaction guaranteed. J. J. Scott, Crowville, La.

WILLOW-DELL queens and bees have pleased. Will again be ready to handle your orders. May delivery with queen, two-frame nuclei, $4.00; three-frame, $5.25; Jumbo, $4.75 and $6.00. Shipping boxes returned collect. H. S. Ostrander, Mellenville, N. Y.

BURLESON'S three-banded Italian queens, for balance of season of 1922 at $1.00 each, or $90.00 per 100. Safe arrival and satisfaction guaranteed. Send all orders together with money to my manager, J. W. Seay, Mathis, Texas. T. W. Burleson, Waxahachie, Texas.

PACKAGE BEES FOR IMMEDIATE DELIVERY. No disease. Safe arrival and satisfaction guaranteed. 2-lb. package with untested queen, $5.25. By parcel post, $5.75 prepaid. Write for circular and prices on quantities. J. M. Cutts & Son, R. D. No. 1, Montgomery, Ala.

EXPRESS is lower on northern bees. Prices no higher, 2 lbs. Italian bees with queen on comb of stores in May, $5.75. Comb of stores insures success. Prompt delivery and safe arrival guaranteed. Card brings circular of golden and 3-banded queens. Ross B. Scott, LaGrange, Ind.

MY GOLDEN ITALIAN QUEENS possess the qualities which make beekeeping profitable. Mated, $1.00 each, $10.00 per doz. Virgins, 50c each or $4.25 per doz. Safe arrival and satisfaction guaranteed. Your orders solicited. Crenshaw County Apiary (Melvin Talley, Prop.), Rutledge, Ala.

THREE-BANDED ITALIAN QUEENS. Bred from queens whose bees have given big crops of honey. Pure mating and satisfaction guaranteed. May 15 to June 15, 1, $1.50; 6, $7.50; 12, $13.50. All orders filled in rotation. First on list will be first filled. J. D. Kroha, 87 North St., Danbury, Conn.

SPICER'S three-band Italian queens will be ready to mail about May 20. If you are interested in improving your stock and getting larger returns from your bees, head your colonies with these queens. Untested, $1.25; 6, $7.00; 12, $13.50. Tested, $2.50 each. Robt. B. Spicer, Wharton, N. J.

BY RETURN MAIL—Tested queens, $2.50 each, reared last fall from our well-known strain of three-banded Italians. None better. Untested queens ready to mail April 15, $1.50; $13.50 per dozen. Safe arrival and satisfaction guaranteed. Also no disease ever in this locality. J. W. K. Shaw & Co., Loreauville, La., Iberia Parish.

I EXPECT to be ready to start shipping 3-lb packages of bees with 1 frame, 1 untested queen at $6.00; 2-frame nuclei with untested queen, $4.50, about April 15. Young tested queen, 50c extra, or $1.50 each. I think I was the second to ship packages of bees from this state and know how to serve customers. F. M. Morgan, Hamburg, La.

TWO-FRAME NUCLEI—These are the ones that always go through in fine shape. They stand shipment as well as a full colony. Build up a new yard this summer with some of these two-frame nuclei. Each nucleus headed with an untested three-banded queen of this spring rearing. I offer 400 of these nuclei, bred here in Louisiana, by a noted breeder. The delivery will be made between the dates of May 15 and June 15. Safe delivery guaranteed. The wholesale price of this lot is $4.00 each in lots of 10 or more. Address with remittance, E. D. Townsend, Marksville, La.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Our aim is not quantity but quality. Our first consideration is to give perfect satisfaction. Untested, $1.50 each; 6 for $8.00; tested, $2.00 each; select tested, $3.00 each. Prof. W. A. Matheny, Ohio University, Athens, Ohio.

FOR SALE—Italian queens. Prices for untested in June, $1.50 each; 6, $8.25; 12, $16.00; tested, $2.50 each. From July 1 to Oct. 1, untested, $1.25 each; 6, $7.00; 12, $13.50; tested, $2.00 each. Safe arrival and satisfaction guaranteed. Ready to ship June 1 to June 10. R. B. Grout, Jamaica, Vt.

FOR SALE—Golden Italian queens and bees, untested. 1 queen, $1.00; 1 dozen, $10.00; 100, $75.00. 2-lb. package, with queen, $5.00; 1-lb. package with queen, $3.00; 12 or more, 5% off. 2-frame nucleus with queen, $5.00; 15 or more, 5% off. Safe arrival and satisfaction guaranteed. J. F. Rogers, Greenville, R. D. No. 3, Ala.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness and perfect markings. Price May and June: $1.50 each, 12 or more, $1.25 each. Send for circular. J. H. Haughey Co., Berrien Springs, Mich.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you want. They are GREAT HONEY-GATHERERS, BEAUTIFUL and GENTLE. Virgins, $1.00; mated, $2.00; 6 for $10.00, or $18.00 per doz.; tested, $5.00. Breeders, $10.00 to $20. Safe arrival guaranteed only in the U. S. and Canada. C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE—Packages bees for spring delivery, three-banded strain, bred for business, 20% cash books your order. Safe arrival and satisfaction guaranteed. A two-pound package of bees, and select untested queen for $5.00; 25 or more for $4.75 each. Write for prices on larger lots. Caney Valley Apiaries, J. D. Yancey, Mgr., Bay City, Texas.

WE have 500 two-pound packages combless bees to offer for delivery May 15 to June 15. The above packages are three-banded stock only. These packages will go very promptly and at a very reasonable price, $2.75 each. Let us help that weak colony by express. We guarantee safe delivery and government health certificate. Oscar Mayeux, Hamburg, La.

FOR MAY DELIVERY—One vigorous Italian queen, one frame emerging brood, one pound bees, price complete, $5.00. Additional pound bees, $1.00. Additional frame of brood, $1.00. Banat mixed queens and bees 5% discount. After May 25 10% discount on all. Safe arrival guaranteed. Send 10% to book order. T. W. Livingston, Norman Park, Ga.

NORTH CAROLINA BRED ITALIAN QUEENS of the reliable strain of three-band Italian bees. I have been breeding them for the last five years. They are gentle and good honey-gatherers. Try them and be convinced. I will be prepared to furnish three times as many queens as I did last year from May 1 until July 1. Untested, $1.40 each; $14.00 per doz.; tested, $2.00 each; $20.00 per doz.; select tested, $2.75 each. Safe arrival and satisfaction guaranteed. L. Parker, R. D. No. 2, Benson, N. Car.

BEES—Engage your queens from any reliable dealer, and we will furnish you the bees. One-lb. pkg., $1.35 each; 2-lb. pkg., $2.50 each; 3-lb. pkg., $3.00 each. No orders accepted for less than 5 lbs. 10% will book your order. Bees will move exact date ordered. 1500 colonies to draw from. Our apiaries are favorably located for early breeding, hence all orders filled with young, vigorous bees. Never had a case of disease in our apiaries. We are experienced shippers. We give a full guarantee safe arrival and satisfaction. Brazos Valley Apiaries, H. E. Graham, Prop., Gause, Texas.

FOR SALE—200 colonies of the celebrated Moore strain of leather-colored Italians. They are in Langstroth hives, combs all built on wired foundation. All have tested queens less than one year old. No disease among or near them. Price in lots of one to 50, $12.00 each; 50 to 100, $11.50 each; 100 or more, $11 00 per colony. Elmer Hutchinson & Son, Lake City, Mich.

TWO-FRAME nuclei, $3.25; three-frame nuclei, $4.00; two-pound package bees one frame emerging bees and honey which is equal to a pound of bees, $3.50 each; untested three-banded Italian queen, $1.00 each. I guarantee safe arrival and furnish health certificate. May and June delivery. This is my last advertisement for this season. C. A. Mayeux, Hamburg, La.

CONNECTICUT queens. Highest grade 3-banded Italians ready June 1. Select untested $1.25 each; 6, $6.50; 12, $12.00; 50, $47.50; 100, $90. Two lbs. bees with queen, $5.00; 3 lbs. with queen, $7.00. Two-frame nuclei with queen, $5.50; 3-frame with queen, $7.50. Select virgin queens (not culls), 50c each, $45.00 per 100. No disease and satisfaction guaranteed. A. E. Crandall, Berlin, Conn.

MAY delivery, one, two and three pound packages, $3.00, $4.00 and $5.00. Nuclei, $3.00, $4.25 and $5.50, with select untested Italian queens. Special orders solicited. Select untested three-band queens, April and May, $1.25, 6 or more $1.00 each. 20% books order. State health certificate. Safe arrival and satisfaction guaranteed. Address Apalachicola, Fla., office. Tupelo Honey Co., Columbia, Ala.

FOR SALE—25 to 40 colonies Italian bees with tested Italian queens in 10-frame Dovetailed standard hives, most new and were painted, Hoffman frames and combs wired, per colony, $15.00. Liberal discount on 25 or more colonies. Also 10 wood-and-wire queen-excluding boards, new, 60c each; 25 wood-and-wire queen-excluding boards used two years, 50c each, for 10-frame hives. S. Coulthard, 528 S. Washington St., Hastings, Mich.

LAST fall I had selected and tested six queens. Will use them as breeders this season in my queen yard. Their surplus honey capacity is from 216 lbs. to 288 lbs. each. I guarantee that every queen bought of me in 1922 is to be the daughter of one of these queens. Bees are three-banded. Mated, in June, $1.25 each; 6, $7.00; 12, $13.50; 25 or more, $1.00 each. After July 1, $1.00 each straight. Julius Victor, Martinsville, N. Y.

PACKAGE BEES—Several hundred 2-lb. packages three-banded Italian bees, with untested queens, for May delivery at only $4.00 per package in lots of 10 or more. From a noted breeder in Alabama. 500 colonies to draw from which should easily produce 1000 2-lb. packages during May. I offer them at this low quantity price to close them all out during this month. A good buy Safe delivery. Address with remittance, E. D Townsend, Marksville, La.

FOR SALE—100% queens bred from extra-select Jay Smith breeder. Larger queens from my cell builders reinforced with hatching brood and mated in standard frame nuclei. I guarantee safe arrival and entire satisfaction and that every queen lays before being caged. Also package bees. I am after a name and reputation. Give me a trial. Select untested, 1, $1.25; 6, $7.00; 12 $13.00; 25 to 100, $1 00 each. H. Peterman, R F. D., Lathrop, Calif.

GOOD queens advertise themselves. It takes expensive advertising to sell poor queens and if you don't believe it try it. We believed in former years we had the best three-banded queens obtainable. We still believe it. Our customers also tell us the same. Try a few. We have dropped the price in reach of all this year. We will have a few virgins for 50c when we have a surplus of them. We can furnish either from imported or Americanized mothers. Untested, $1.00; selected, $1.25; tested, $2.00; selected, $2.50. F. M. Russell, Roxbury, Ohio.

BRIGHT ITALIAN QUEENS, $1.00 each, 10% less in dozen lots. Pure mating, safe arrival and reasonable satisfaction guaranteed in U. S. and Canada. Write us for prices on package bees. We have them in season. Graydon Bros., Rt. 4, Greenville, Ala.

LARGE, HARDY, PROLIFIC QUEENS—Three-band Italians and Goldens. Pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. After June 1 prices as follows: Untested, $1.25 each; 6 for $7.00; select untested, $1.50 each; 6 for $8.50; select tested, $3.00 each. Special prices on larger quantities. Queens clipped free on request. Health certificate with each shipment. Buckeye Queens, Zoarville, Ohio.

FOR SALE—Two-frame nuclei Italian bees, with tested Italian queen, delivery May 1 by express f. o. b. here, $7.50 each. Terms, $2.00 down, balance ten days before shipping date. These queens were reared last August from very choice Italian stock, and big producers. Order early as we have set a limit on number of nuclei we will sell this season. First come, first served. Largest apiary in Westchester County, Spahn Bros., Pleasantville, Westchester Co., N. Y.

PACKAGE BEES—I offer for sale 1000 2-lb. packages Italian bees with untested queens for June or July delivery, from Penn., at only $4.00 per package in 10-package lots or more. Order this lot of bees near home and save a large express bill. 500 colonies which should easily produce 1000 packages during the season. This is a fine lot of three-banded bees at a living price and should sell at once. Safe delivery. Address with remittance, E. D. Townsend, Marksville, La.

QUEENS AND PACKAGE BEES—March 1 finds us ready for shipping. Let us book you for short notice shipping. Bees and queens for your unpacking time. We have just added 1200 colonies of bees to our business in Mesa, Ariz., with our Mr. Jas. Lisonbee where weather and spring conditions are ideal for March and April package bees. All queens will be shipped from our large queen yards at Sandia, Texas, where we breed our pedigreed strain of three-band leather-colored queens from tested honey-producing mothers, and 8 miles out we breed our special golden queens that produce bees solid yellow to the tip. Very gentle, prolific and good honey-getters. 1 untested queen, $1.50; 25 or more, $1.25 each; 1 select untested queen, $1.70; 25 or more, $1.40 each; 1 select tested queen, $3.00; tested breeder, $5.00. 1-lb. package bees, $2.25; 25 or more, $2.15; 1 2-lb. package bees, $3.75; 50 to 100, $2.60 each. Larger size quoted on request, also parcel post packages. Safe arrival guaranteed. Send all orders to Dr. White Bee Company, Sandia, Texas

QUEENS AND PACKAGE BEES—Bright, three-banded Italian. We are now booking orders for the season of 1922. Shipments of queens and package bees this year commenced on March 15. All queens are mated in standard full-sized nuclei. We operate four thousand standard full-sized nuclei. Capacity and output of queen yards this season five thousand queens per month. We own, operate and run for extracted honey in the states of California and Nevada twelve thousand colonies of bees. All of our breeders are selected queens whose colonies led these twelve thousand colonies of bees last season. Better selection of breeders cannot be equaled or had anywhere. We have the capacity and output of queens and package bees to make shipments promptly as and when promised. We guarantee safe arrival of queens and package bees. Prices—Mated, untested queens: 1, $1.00; 6, $5.50; 12, $9.60; 13 to 99, 75c each; 100 or more, 70c each. Package Bees—Write for special price. Terms, 10 per cent deposit on booking order; balance at time of shipment. See our large advertisement in this magazine. Western Bee Farms Corporation (Principal); Western Honey Corporation and Western Citrus Honey Corporation (Associated Corporations). Claus Spreckels Building, No. 703 Market Street, San Francisco, California.

MISCELLANEOUS.

MAPLE sugar, pails and cakes. Write for prices W. A. Grover, Honey Hill Farm, Bristol, Vt.

FOX HUNTING—Beekeepers, I have a litter of thoroughbred Walker pups, beauties, at $10 each. Papers furnished. Also one two-year-old H. S. Ostrander, Mellenville, N. Y.

TYPEWRITERS—All makes slightly used; $20 up. Easy payments. Free trial. Express prepaid. Guaranteed two years. Payne Company, Rosedale, Kansas.

MEDICINAL roots and herbs are very profitable to grow. We especially recommend growing Golden Seal, which with good care will yield as high as $10,000 per acre for each crop. It takes several years to mature but will average $1000 a year. Special Crops, a monthly paper, tells how. Sample copy, 10c. $1.00 per year. Address Special Crops Pub. Co., Box "G," Skaneateles, N. Y.

HELP WANTED.

WANTED—Man with some experience to work in our apiaries. State age, experience and wages. Answer fully in first letter. The Rocky Mountain Bee Co., Box 1319, Billings, Mont.

SITUATION WANTED.

A YOUNG German man, professional experienced bee-raiser wishes employment. E. Pfeil, 25 Division St., Jamaica, L. I., N. Y.

MAN with 30 years' experience wants position as apiarist or bee inspector. E. H. Vincent, Miami, Okla.

WANTED—Position with bees. Have 10 years' experience with commercial apiaries. State conditions. J. Vick, Box No. 78, Corozal, P. R.

WANTED—Work for the summer, with an American, Christian family, by an experienced farmer, beekeeper, teacher and Christian worker Manager or helper. Address P. O. Box 551, Ottumwa, Iowa. 558

Golden Queens, 1922

Untested, $1.25 each, or $12.00 per dozen; $90.00 per hundred. Tested, $2.00 each. Two-pound packages, each delivered with untested queen, $6.50; two-frame nuclei with untested queen, delivered, $6.50. Satisfaction guaranteed and shipments from April 15th.

R. O. COX, Box 25, Rutledge, Ala.

QUEENS -- QUEENS

LARGE leather-colored 3-banded Italian queens; 10-years selection, bred for honey-gathering; gentle, hardy and long-lived. Price: Select untested. 1, $1.25; 6, $6.50; 12, $12. After July 1: 1, $1; 6, $5; tested, $1.50 each. Write for price on large orders. Free booklet, "How to Transfer. Get Honey and Increase."

J. M. GINGERICH, KALONA, IOWA.

BEES—ITALIAN BEES—BEES

Full colonies with Italian queen at $15; 2 for $25. 3-frame nucleus with Italian queen at $6.50. 3-lb. package with Italian queen at $6.50. No disease. Safe arrival and satisfaction guaranteed.

VAN'S HONEY FARMS

Van Wyngarden Bros., Props. Hebron, Indiana.

We Are the HUB for

HUBAM

Guaranteed, certified, Annual Sweet Clover.

All new crop, grown on our own farms and all from the first fifty seeds from that original plant at Ames.

We are shipping to all parts of the world now. HUBAM is being planted somewhere every day for bee pasture, hay, pasture, or for green manure to plow in.

The seed is hulled and scarified, with a purity of 99.8% and grows 97%. Price now is $2.00 per pound.

With each and every order for Hubam we will include FREE a can of Nitragin pure culture bacteria which will insure proper growth of the Hubam plant.

Our seed is pure. You buy from an old established firm with a reputation to maintain when you buy from

THE HENRY FIELD SEED COMPANY
SHENANDOAH, IOWA.

Annual Sweet Clover Seed for Sale at Low Prices

NOW IS THE TIME TO PLANT.

Fifteen years ago M. C. Berry discovered this wonderful plant growing on the "Old Gilmer Plantation," near Tyson, Ala. Since that time we have watched with interest its great spread and growth throughout Alabama. As a plow-under green manure crop it has no equal and for honey we find it wonderful. In gathering this seed we had a lot that through a misunderstanding was mixed with Biennial. Our loss your gain, as we are selling these seed at unheard of low prices as long as they last.

PRICES AS FOLLOWS, TRANSPORTATION PREPAID.

5 to 10 pounds, 25c a pound; 25 to 50 pounds, 20c a pound.

50 to 100 pounds, 17½c a pound; 100 pounds and up, 15c a pound.

Seed is guaranteed to be pure Sweet Clover running from 50 to 90 per cent pure annual and the balance pure biennial. All seed are hulled, and scarified germination guaranteed to please.

M. C. BERRY & CO.

BOX 697, MONTGOMERY, ALA., U. S. A.

QUEENS

Bright Three-Banded Italian.

QUEENS

Bright Three-Banded Italian.

Package Bees

We are now booking orders for queens and package bees for the season of 1922.

Shipments of queens and package bees this year commenced on March 15, 1922.

All queens are mated in standard full-sized three-frame nuclei.

We are operating four thousand standard full-sized three-frame nuclei.

Capacity and output of queen yards this season is five thousand queens per month.

We own, operate and run for extracted honey in the states of California and Nevada twelve thousand colonies of bees. All of our breeders are selected queens whose colonies led those twelve thousand colonies of bees last season. Better selection of breeders cannot be equaled or had anywhere.

We have the capacity and output of queens and package bees to make shipments promptly as and when promised.

All queens shipped by us in six-hole mailing cages. No small-sized mailing cages used.

We guarantee safe arrival of queens and package bees. Any queens or package bees arriving dead at destination will be replaced without charge.

References by permission: The A. I. Root Company of California, No. 52 Main Street, San Francisco, California, and No. 1824 E. Fifteenth Street, Los Angeles, California; The Diamond Match Company, Apiary Department, Chico, California; The Western Honey Bee, No. 121 Temple Street, Los Angeles, California; Bees and Honey, Hutchinson Building, Oakland, California; The Beekeepers' Review, Lansing, Michigan.

Banking references upon request.

We respectfully solicit your patronage.

Prices and Terms

MATED UNTESTED QUEENS

1	$1.00
6	5.50
12	9.60
13 to 99, each	.75
100 or more, ea.	.70

PACKAGE BEES.

Write for special Price.

TERMS.

10% deposit on booking order.
Balance at time of shipment.

WESTERN BEE FARMS CORPORATION

(PRINCIPAL)

Westen Honey Corporation :: Western Citrus Honey Corporation

(ASSOCIATED CORPORATIONS)

General Offices: Claus Spreckels Building, No. 703 Market Street, San Francisco, California.

One-Story Complete Dovetailed Hive

With metal telescope cover, inner cover, reversible bottom, Hoffman frames, nails, rabbets.

Standard Size.

Crate of Five, K. D., 8-frame	$12.65
Crate of five, K. D., 10-frame	13.25

Jumbo Size.

Crate of five, K. D., 10-frame	14.25

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Hive-Bodies

With Hoffman frames, nails, rabbets.

Standard Size, crate of five, K. D., 8-frame	$5.20
Standard Size, crate of five, K. D., 10-frame	5.85
Jumbo Size, crate of five, K. D., 10-frame	6.85

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Hoffman Frames

Standard Size	100,	$5.20;	500,	$25.00
Shallow	100,	4.30;	500,	21.00
Jumbo	100,	5.80;	500,	28.00

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Diamond Brand Foundation

Medium	5 lbs.,	68c lb.;	50 lbs.,	65c lb.
Thin Super	5 lbs.,	75c lb.;	50 lbs.,	72c lb.

-o- -o- -o-

We carry Aluminum Honeycombs as now made by Duffy-Diehl Company, in stock to supply Eastern Beekeepers.

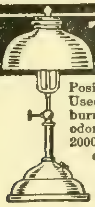
Standard Langstroth	$5.00 box of 10
Shallow Extracting	4.00 box of 10
Jumbo	6.00 box of 10

HOFFMAN & HAUCK, INC.
WOODHAVEN, NEW YORK

Special Notices by A. I. Root

WIND ELECTRICITY.

After my statement in the March number had gone out, I realized it didn't cover the ground very well. Since that date we have had wind, so that during March the engine was hardly used at all. In fact, we run the auto on longer trips than before, light the premises, run an electric fireless cooker and I have a warming pad to warm my feet nights—and the wind (often cold north winds) does it all nicely. The engine only gives 16 amperes steadily, while the windmills often give 25, and sometimes even 30 for a brief interval. This is all right for heating and cooking, and the batteries in that case are used little or not at all.



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Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles. 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog. AGENTS WANTED EVERYWHERE.

THE BEST LIGHT CO.
306 E. 5th St., Canton, O.

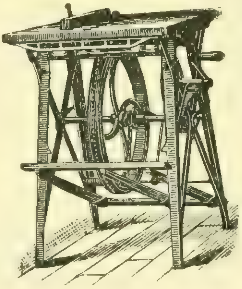
BARNES' HAND & FOOT POWER MACHINERY

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial

Send for illustrated catalog and prices.

W. F. & JOHN BARNES CO.
545 Ruby Street
ROCKFORD, ILLINOIS.



PATENTS Practice in Patent Office and Court. Pat. Counsel of The A. I. Root Co.
CHAS. J. WILLIAMSON,
McLachlan Bldg., Washington, D. C.

30 Days' Free Trial Select from 44 Styles, colors and sizes, famous Ranger bicycles. Delivered free on approval, express prepaid, at Factory Prices. You can easily Save $10 to $25.

12 Months to Pay if desired. Parents often advance first deposit. Boys can earn small payments.

Tires Wheels, lamps, horns, equipment at half usual prices. Send No Money. Write for our marvelous prices and terms.

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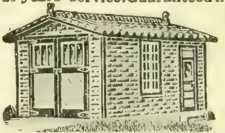
World's Best Roofing at Factory Prices

"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofing, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Save money—get better quality and lasting satisfaction.

Edwards "Reo" Metal Shingles

have great durability—many customers report 15 and 20 years' service. Guaranteed fire and lightning proof.



Free Roofing Book

Get our wonderfully low prices and free samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No. 183

LOW PRICED GARAGES

Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles.

THE EDWARDS MFG. CO.
533-583 Pike St. Cincinnati, O.

FREE
Samples & Roofing Book

TALKING LAWS' QUEENS SPEAK FOR THEMSELVES QUEENS

Over thirty-five years as commercial queen-breeder and advertiser in this journal have brought orders from thousands of Gleanings readers. If there is a dissatisfied customer I do not know it. I have many testimonials that make me glad. One firm bought over 5000 queens of me, and writes that my "queens and business methods are very satisfactory." Another writes, "Your queens are all good queens. Our individual crop of honey was 105,000 pounds season 1921; Laws' queens did it."

PRICES: Untested, each, $1.25; 12 for $12. Tested, each, $1.50; 12 for $15. Breeding queens, none better if as good, each, by mail, $5; or with a 3-frame nucleus of her own bees by express, $10. This nucleus, if ordered early, should gather honey enough to pay all costs. Write for prices quantity lots. I am prepared to furnish in large lots; also bees in three-frame nuclei. No disease; entire satisfaction. Address

W. H. LAWS, BEEVILLE, BEE COUNTY, TEXAS

''Marugg's Special''

IMPORTED MOWING BLADES

And Sickles with DANGEL cutting edge "THE MARUGG SPECIAL" are praised by thousands of users in the United States. Used by leading apiarists. Write for particulars to THE MARUGG COMPANY, Dept. B, TRACY CITY, TENN.

A-T-T-E-N-T-I-O-N!

OHIO AND WEST VIRGINIA BEEKEEPERS.

We are most favorably located for serving Central, Southern and Eastern Ohio, and also West Virginia. No matter where you are, full stocks, best shipping facilities and prompt attention will insure satisfaction. Free catalog.

MOORE & PEIRCE
Zanesville, Ohio—"Beedom's Capital."

Three-banded Italians for May Shipments.

	1	12	100
Untested Queens	$1.00	$11.00	$ 75.00
Select Untested	1.25	13.00	100.00
Tested Queens	1.35	15.00	125.00
Breeders			$5.00 each

Safe arrival and satisfaction guaranteed.

H. L. MURRY, SOSO, MISS.

INDIANOLA APIARY offers Italian Bees and Queens for following prices: Untested Queens, $1.00 each; Tested Queens, $1.50 each. Bees, per lb., $2.00. Nucleus, $2.00 per frame. No disease. Bees inspected.

J. W. SHERMAN,
Valdosta, Georgia.

ROOT QUALITY BEES AND BEEKEEPERS' SUPPLIES.

Bees in the hive, in packages, and nuclei, three-banded leather-colored Italian queens. Let a beekeeper of long standing serve you in your requirements for 1922. Catalog on request.

O. G. RAWSON,
3208 Forest Place, East St. Louis, Illinois.

Queens of Quality

——from——

Tennessee

3-band Italians only.

Untested, $1.25 each; six for $7.00; $12.00 per dozen. Ready about May 10th Circular free.

J. I. BANKS, DOWELLTOWN, TENN.

—QUEENS OF—

MOORE'S STRAIN

OF ITALIANS PRODUCE WORKERS

That fill the supers quick
With honey nice and thick.

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc. Untested queens $1.50; 6, $8; 12, $15.00. Select untested, $2; 6, $10.00; 12, $19.00. Safe arrival and satisfaction guaranteed. Circular free.

J. P. MOORE, Queen Breeder,
Route 1, Morgan, Kentucky.

PATENTS---TRADEMARKS

I offer prompt, personal and expert professional service. 10 years' experience. Write for terms. **LESTER SARGENT, Patent Attorney, 524 Tenth St., N. W., Washington, D. C.**

MASON BEE SUPPLY COMPANY
MECHANIC FALLS, MAINE

From 1897 to 1922 the Northeastern Branch of The A. I. Root Company

PROMPT AND EFFICIENT SERVICE

BECAUSE—Only Root's Goods are sold.
It is a business with us—not a side line.
Eight mails daily—Two lines of railway.
If you have not received 1922 catalog send name at once.

NEW ENGLAND

Beekeepers will find a complete line of the best supplies here. Send in your order early and be ready for the harvest. Remember this is the shipping center of New England. Write for new catalog.

H. H. JEPSON
182 Friend Street. BOSTON 14, MASS.

QUEENS OF QUALITY.

When you want them at the lowest prices possible for high quality queens.

Untested	1 to 12, $1.00 each
Select Untested	1 to 12, $1.25 each

Entire satisfaction and safe arrival guaranteed in U. S. A. and Canada; will start shipping about May 20.

OHIO VALLEY BEE CO., CATLETTSBURG, KY.

MAY QUEENS PRICED RIGHT

UNTESTED, $1.20 EACH. 12 OR MORE, $1.00. SELECTED UNTESTED, $1.50. TESTED, $2.00.

Satisfaction guaranteed. No Disease.

D. W. HOWELL
SHELLMAN, GEORGIA. BOX A3.

Q-U-E-E-N-S

Select three-banded Italians that will please. Our bees are unexcelled for gentleness, disease-resisting qualities and honey production. Pure mating and satisfaction guaranteed.

	1	6	12
Untested	$1.25	$ 7.00	$13.00
Select Untested	1.50	8.00	14.00
Tested	2.50	13.00	25.00
Select Tested	3.00	16.00	30.00
Select Tested Breeders			**$5.00**
Day-old queens			**40c each**

Queens ready to ship by return mail. Queens' wings clipped free of charge. Write for descriptive circular and prices per hundred.

HARDIN S. FOSTER
COLUMBIA - - - - TENNESSEE

"Best" Hand Lantern

A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. **Agents wanted. Big Profits. Write for Catalog.** THE BEST LIGHT CO.
306 **E. 5th St., Canton, O.**

BANKING BY MAIL AT 4%

A.T. Spitzer
PRES.

E.R. Root
VICE PRES.

E.B. Spitzer
CASHIER

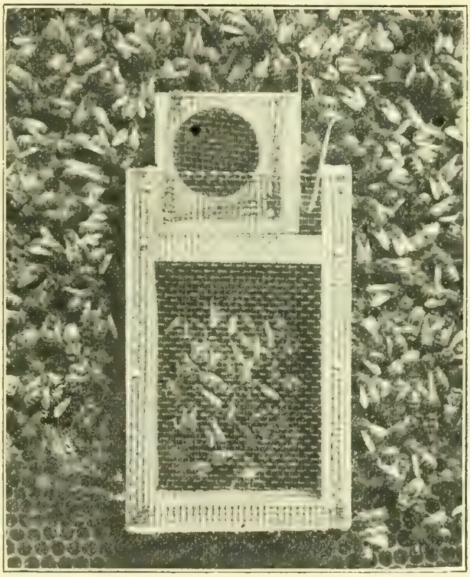
ONE DOLLAR DEPOSITS FROM OUT-OF-TOWN CUSTOMERS

The Savings Deposit Bank Company welcomes Savings Accounts in any sums from a dollar up.

Deposits by mail are received from those who find it inconvenient to call personally.

The SAVINGS DEPOSIT BANK CO.
THE HOME OF THE HONEY-BEE MEDINA, OHIO

Save Those Queens



(Patent pending.)

A large percentage of queens are lost through faulty methods of introduction, and many more are injured so that they produce little or no honey where they would have produced several hundred pounds if they had been properly introduced. The Jay Smith cage will introduce every one with absolutely no injury, if the simple directions are followed.

It will introduce virgins to full colonies, and it will introduce either virgins or laying queens to laying-worker colonies. It will save many times its cost in a season. Hundreds of these cages have been used all over the U. S. with unqualified success.

J. E. Crane, one of America's foremost beekeepers, writes: ''It is the best of anything I have seen.'' M. H. Mendleson of California, than whom there is no higher authority upon this subject, after purchasing 200 of these cages, writes: ''From extensive experiments in introducing many queens, we have had perfect success, never losing a queen nor having a single failure with the Smith cage. We have even had entire success in introducing queens to laying-worker colonies.'' The cage is well made and should last a lifetime if taken care of. Price postpaid, 75 cents. Write for descriptive circular.

JAY SMITH.
Route 3. VINCENNES, IND.

ITALIAN QUEENS.

Three-banded. Ready June 1. Satisfaction guaranteed. Untested, $1.50 each; 6, $8.00; tested, $2.50 each; 6, $14.00. Will book orders now.

CHAS. W. ZWEILY,
Willow Springs, Illinois.

Too Late for Classification.

SEE Thagard's ad elsewhere back to pre-war day prices.

WANTED—Position in apiary by experienced beekeeper. Address Box No. 45, East Downingtown, Pa.

FOR SALE—2 locations, about 500 colonies bees, in good cypress and white pine 10-frame hives. Am moving to another part of the state R. H. Fryer, Sumatra, Fla.

FOR SALE—20 acres of land in Florida 10 acres good timber; ideal location for large apiary in famous tupelo belt; fertile soil grows fruits, vegetables, pecans, etc.; wonderful climate, hunting, fishing, etc.; good reason for selling; $50 per acre. W. I. Keiter, Cherrydale, Va.

FOR SALE—250 colonies of bees, all in 10-frame hives, practically all new equipment, a splendid orange and sage location with an eight-room house, modern, plenty of land and in one of the best sections of Southern California. Will sell everything, property furnished ready to move into. Can give possession at once. Honey flow should last until middle of August. Address C. A. Wurth, R. D. No. 1, Box 167, Riverside, Calif.

Ready now, 3-banded Italian queens, the famous Dr. Miller and my own stock. Prices: Untested, $1.25 each, 6 for $7.00, 12 for $13. Selects, 25c each higher; clipping free. Tested, $2.00 each, 6 for $11, 12 for $20. Write for prices on larger lots. 3-frame nucleus with untested queen, $5.50; without queen, $4.25. Bees, one pound $2.00; two pounds, $3.75; three pounds, $5.25. (Add price of queens to same.)

As I have just got located in my new location I am not booked very heavy with orders; so, if you want bees and queens from the south early, give me a list of what you want booked, and date of shipment. A square deal to all my customers, new as well as old. 20 years' experience with the bees. 10 years rearing and shipping bees; give me a chance. I will surely try to treat you squarely.

CURD WALKER,
(Formerly of Jellico, Tenn.) **Scotts Station, Ala.**

QUALITY BEES

From the apiaries of E. R. King, formerly Deputy State Inspector of Apiaries in Ohio, later in charge of Apiculture at Cornell University.

	MAY	JUNE	JULY
Full colony in 1-story 10-fr. hive with tested queen	$17.00	$14.50	$12.00
Two-frame nucleus with untested queen	6.75	5.50	4.00
2-lb. package of bees with untested queen	5.75	4.75	4.00
Untested Italian queen		1.25	1.00

First shipments can be made about May 15. 20 per cent payable with order, remainder at shipment. Price reductions for quantity orders.

KING'S APIARIES
McARTHUR, OHIO.

QUEENS

Reared from the best breeders obtainable in strong ten-frame colonies. Mated in four-frame nuclei. Delivery after April 10th at the following prices:

Untested—1, $1.25; 5, $5.50; 10, $10.00.
Tested—1, $2.00; 10, $17.00.

PACKAGE BEES WITH QUEENS.

1-lb. package, $3.50; 10 or more, $3.25 each.
2-lb. package, $5.25; 10 or more, $5.00 each.

Situated to promptly supply Western and Northwestern Beekeepers. Safe arrival and satisfaction guaranteed.

THE ORANGE APIARIES, PORTERVILLE, CALIF.
O. F. Darnell, Prop. M. S. Fortune, Breeder.

Three-Banded Italian QUEENS

Bred from queens whose bees have given big crops of honey. Pure mating and satisfaction guaranteed. May 15 to June 15: 1, $1.50; 6, $7.50; 12, $13.50. All orders filled in rotation. First on list will be first filled.

J. D. KROHA, 87 North St., Danbury, Conn.

Northern-bred Queens Are Hardy Queens

We are in position to furnish you good, hardy, thrifty queens, the result of ten years' selective breeding, the best breeders from over seven hundred colonies. Each breeder has a honey record. Each year new stock has been secured, and so we have built up a strain of bees which, I believe, cannot be beaten in the Northwest. Orders will be handled promptly. On large orders secure mailing date. Fifteen per cent down, balance two weeks before shipment. Shipments begin June 1.

1 Untested Queen	$ 1.50
6 Untested Queens	7.50
12 Untested Queens	14.00
50 Untested Queens	55.00
100 Untested Queens	100.00
Tested Queens, each	2.50

WELLS D. ROSE.
Sunnyside, Washington

SCOTT QUEENS ARE GOOD QUEENS

MY QUEENS ARE GETTING RESULTS.

Among my hundreds of colonies and for my customers. One writes: "Dear Mr. Scott: Please book me for ½ dozen queens. Those I got from you last season have made 150 lbs. comb honey so far this season. Yours truly."—(Name on request.)

UNTESTED GOLDEN OR THREE-BANDED QUEENS.

June 1 to July 15: One, $1.50; six, $8.00; dozen, $15.00. Pure mating, safe arrival and satisfaction. No disease. Circular on request.

ROSS B. SCOTT, LA GRANGE, INDIANA.

3-BAND ITALIANS

Our queen-rearing department is under the supervision of H. D. Murry, well known to the trade as a breeder of GOOD QUEENS. Reared from stock that put up 250 pounds surplus honey. Prompt and satisfactory service.

Untested, $1.25; 6, $7.00; 12, $13.50; 25 or more, $1.00. Tested, $2.00.

MURRY & BROWN
MATHIS, TEXAS.

QUEENS

OUR OLD RELIABLE THREE-BANDED ITALIANS ARE HONEY GETTERS.

They are gentle, prolific, and very resistant to foul brood. Orders booked for one-fourth cash. Safe arrival guaranteed. Circular free.

PRICES APRIL 1st TO JULY 1st.

Untested	$1.25;	over 25, $1.00 each
Sel. Unt.	1.50;	over 25, 1.25 each
Tested	2.50;	over 25, 2.25 each
Selected Tested		3.00 each

See our Dec. and Jan. Advertisement.

JOHN G. MILLER
723 C Street, Corpus Christi, Texas.

QUEENS

Three-banded Italian Queens that must please. Pure mating and satisfaction guaranteed. We do not claim to have the best, but do claim them to be as good. Untested Queens, $1.25 each. Twelve or more, $1.10 each. Tested Queens, $1.60 each. Twelve or more, $1.40 each.

CYPRESS BEE SUPPLIES

Hives, hive-bodies, bottom-boards, covers, frames, foundation, etc. Write for prices. All queens shipped from Crawford, Miss.; all supplies shipped from Coker, Ala.

THE ABSTON APIARIES
Crawford, Miss. Coker, Ala.

Newman's Queens

ORIGINATED FROM THE WORLD-FAMOUS MOORE STRAIN OF ITALIANS. ABSOLUTELY FIRST QUALITY AND FULLY GUARANTEED. NO DISEASE. SATISFACTION AND SAFE ARRIVAL.

Untested $1.25; 6, $7.00; 12, $13.50.
Select Untested, $1.75; 6, $9.00; 12, $17.00.

Circular free.

A. H. NEWMAN, QUEEN-BREEDER.
MORGAN, KY.

MOTT'S NORTHERN-BRED ITALIAN QUEENS

All are selected queens this season.

Select Untested, $1.50 each, $15.00 per doz. Sel. Guaranteed pure mated, or replace free, $1.75 each, $18.00 per doz. Sel. Tested, $2.50. Virgins (not mated), 75c each, $8.00 per doz. After June 1st, 10% off to the Canadian trade to help out on exchange.

Plans "How to Introduce Queens" and "Increase," 25c.

E. E. MOTT
GLENWOOD, MICHIGAN.

Quigley Quality

Italian Queens and Bees are produced by double grafting, producing queens of superior quality and long-lived bees, filling your big hives with bees. Hustlers, hardy, wintering on summer stands. No disease; 36 years in this location. Purity and satisfaction guaranteed.

Tested May and June	$3.00
Fine Breeders	$10.00
Untested, May and June........	$ 2.00
Six for	$11.00
3-frame Nuclei, tested queen.....	$ 7.50

Send for circular.

E. F. QUIGLEY & SON,
Unionville, Missouri.

BURLESON'S OLD RELIABLE
Three-Banded Italian Queens

NONE BETTER—Not as cheap as some, but worth the difference. I guarantee them to be absolutely free from brood diseases.

These are My 1922 Prices—Untested, $1.25 each; $13.50 per doz; 25 or more, $1 each. Select Untested, $1.50 each; $15 per doz., 25 or more, $1.15 each. Select tested, $3 each.

Considering the high quality of my queens combined with service and reliability justifies the above prices. **Send all orders together with remittance to**

J. W. SEAY, Mgr., MATHIS, TEXAS
T. W. BURLESON, WAXAHACHIE, TEXAS.

That Pritchard Queens
AND
Pritchard Service

made a hit last season is proven by the many letters of appreciation and repeated orders received. This year we are BETTER PREPARED WITH a LARGER OUTFIT AND REDUCED PRICE.

THREE-BANDED ITALIANS.

Untested ......$1.25 each; 6 for $7.00
Select Untested.$1.50 each; 6 for $8.50
Select Tested ....each $3.00

Queens clipped free on request. We are booking orders now. Send yours at once and we will do our best to ship on date you desire. Acknowledgment and directions for introducing sent on receipt of order. Safe arrival and satisfaction guaranteed. Untested ready about June 1.

ARLIE PRITCHARD
R. F. D. No. 3. MEDINA, OHIO

YOUR MONEY'S WORTH
--OR--
YOUR MONEY BACK

Williams' queens of quality are good: we know it; let us prove it to you. They have pleased many. Write for free circular.

Pure mating, safe arrival and satisfaction guaranteed.

Select Untested, $1.25.

Tested, $2.00.

P. M. WILLIAMS
FORT DEPOSIT - ALABAMA

Our Special May Offer on Packages

Transportation Paid

Twenty-six years of select breeding gives us a strain of bright Three-banded Italian Bees that are unsurpassed for their disease-resisting and honey-gathering qualities.

DELIVERY MAY 10 TO JUNE 1.

All packages with young select queens.
1-lb. pkgs., $3.50 each; 6, $3.25 each; 12 or more, $3.00 each.
2-lb. pkgs., $5.00 each; 6, $4.75 each; 12 or more, $4.50 each.
3-lb. pkgs., $6.25 each; 6, $6.00 each; 12 or more, $5.75 each.

Untested select queens, $1.25 each.
Tested select, $2.50 each.

We guarantee our bees to give absolute satisfaction and to arrive in perfect condition. Our strain has pleased thousands of others. Give them a chance to please you. They know how. Our little booklet free for the asking. It tells all about our bees and how to handle them for best results.

M. C. BERRY & CO.
BOX 697, MONTGOMERY, ALA, U. S. A.
(Formerly Hayneville, Ala.)

QUEENS

Pure Three-Band Italians Only.
Select Breeding.

Best methods and equipment as approved by up-to-date authorities. You can get none better at any price. Our free folder will tell you what others say about them. A trial order will convince you that they have the qualities desired.

PRICES AND TERMS.

Untested, 1 to 12, $1.10 each; 13 to 25, $1.00 each; 26 to 100, 90c each. Select untested, add 25c per queen. Tested, $1.75. Select Tested, $2.00. Breeders, $7.50 and $10.00 each on a one-frame nucleus.

For delivery after June 1st, deduct 10% from above. Send 20% to book, and balance before shipment is wanted. Pure mating, safe arrival and complete satisfaction guaranteed. No more package bees or nuclei this season.

JENSEN'S APIARIES
R. F. D. No. 3, CRAWFORD, MISS.

DON'T DELAY---GET OUR PRICES

WE SAVE YOU MONEY

"Falcon"

SUPPLIES --- QUEENS --- FOUNDATION

W. T. FALCONER MFG. COMPANY

FALCONER (Near Jamestown) NEW YORK

"Where the best beehives come from."

CENTRALLY LOCATED TO SERVE NEW ENGLAND BEEKEEPERS.

Root QUALITY BEE SUPPLIES

ORDERS FILLED PROMPTLY.

—

CATALOG ON REQUEST.

F. COOMBS & SONS, BRATTLEBORO, VERMONT

Do You Want a Big Honey Crop for 1922?

Thagard's Italian Queens

BRED FOR QUALITY

Will produce workers that will gather a mammoth honey crop for you. Prompt service and perfect satisfaction guaranteed. We are back to Pre-War days prices on queens and bees. Catalog free.

UNTESTED

1 to 12, $1.00 each; 12 to 49, each, 95c;
49 to 99, 85c each; 100 or more, 80c each.

ITALIAN BEES—WITH ITALIAN QUEENS.

1-pound package	$3.00
2-pound package	5.00

If you want untested queens bred from any special breeders, the price will be:
1 to 5, $1.50 each; 5 to 12, $1.10; 12 to 50, $1.00 each.

V. R. THAGARD CO. - - GREENVILLE, ALABAMA.

3000 Monthly Capacity

65c EACH

Prompt Shipment

Untested Queens

In order to keep working at full capacity we are making a big cut in the price of

Forehand's Three-Bands

The Thrifty Kind

Thirty years of experience go into the rearing of our queens. Select breeding for over a quarter of a century brings them up to a standard **surpassed by none but superior to many.**

We guarantee pure mating and satisfaction the world over. Safe arrival guaranteed in the U. S. and Canada. For the balance of the season we are selling bees in combless packages only. We have several thousand queens ready for shipment. Send in your order at once.

UNTESTED QUEENS EACH.

1, $1.00; 6 to 11, 95c; 12 to 49, 90c; 50 to 99, 85c; 100 to 249, 80c; 250 to 499, 75c; 500 to 1000, 65c. Prices quoted on other grades upon application.

POUND BEES.

1 one-lb. pkg...$2.00; 25 and over, $1.90
1 two-lb. pkg... 3.50; 25 and over, 3.25
1 three-lb. pkg.. 5.00; 25 and over, 4.75

Catalog sent free.

W. J. FOREHAND & SONS, Fort Deposit, Alabama

Special Low Prices For May Delivery

Transportation Prepaid on Everything We Ship.

1000 Full Colonies. 1000 Nuclei.

We have the bees and queens and they must ride.

Prices of Packages with Young Queens

1-lb. pkgs., $3.00 each; 6 to 12, $2.75 each; 12 and up, $2.50 each.
2-lb. pkgs., $5.00 each; 6 to 12, $4.75 each; 12 and up, $4.50 each.
3-lb. pkgs., $6.00 each; 6 to 12, $5.75 each; 12 and up, $5.50 each.
Untested select queens, 75c each.
Tested select queens, $1.50 each.

REMEMBER WE PAY ALL MAIL OR EXPRESS CHARGES.

Our bees are wonderful honey-gatherers gentle and very resistant to disease. Others perhaps as good but none better. Wings clipped free of charge on request. Safe arrival and full satisfaction guaranteed. To know us try us. To know our bees try them. We ship promptly or return your money.

Hayneville Apiary Co.
HAYNEVILLE, ALA.

When You Want

quality, disease-resisting, and honey-gatherers why not Root's strain that has been tested out for over 50 years? I am prepared to take care of your wants. Small or large orders will receive my prompt attention. Quality, service and satisfaction is my motto. Remember you get what you order with a guarantee backed by years of experience.

PRICES TO JULY 1.

Untested Queens, 1, $1.25, 12, $13.80, 100 $90.00. Select Untested, 1, $1.60. Tested, 1, $2.00. Select Tested, $2.40.
After July 1, 10% discount.
Write for circular.

A. J. PINARD
440 North 6th Street, SAN JOSE, CALIF.

A Big Honey Crop

Have you learned the secret of a bumper honey crop? If you will head your colonies with young prolific queens, your yield will surely be greater. Buy your queens from L. L. Forehand. They have been on the market for over twenty years. THEY ARE BRED FROM IMPORTED MOTHERS. They cannot be beaten for honey-gathering, gentleness, prolificness, disease-resisting and non-swarming.

Guarantee

I guarantee every queen will reach you alive, to be in good condition, that she will be purely mated and to give perfect satisfaction. I will return your money or replace queens that are not satisfactory in every way. Safe delivery guaranteed in U. S. and Canada only.

	1	6	12	100
Untested	**$1.50**	**$7.50**	**$13.50**	**$1.00 each**
Selected Untested	**1.75**	**9.00**	**16.50**	**1.25 each**
Tested	**2.50**	**13.00**	**24.50**	**2.00 each**
Selected Tested	**4.00**	**22.00**	**41.50**	**3.35 each**

Send for circular. It contains useful information.

L. L. FOREHAND, Fort Deposit, Alabama

3000 Young Vigorous Italian Queens

For May and June Delivery

Highest Quality *Prompt Service*

MR. BEEKEEPER:—I will have 3000 young vigorous Italian Queens for sale during May and June. During my 15 years of experience with bees I have bought some of the finest Breeding Queens that could be obtained, and have improved them to the highest point. I now have a strain of bees that I positively guarantee cannot be excelled, at the right price. If you do not believe what I say about these queens, give me a trial order and order the same amount from any breeder you may wish and see for yourself. Why pay $2.00 or $3.00 for your queens when you can get the same strain at a much lower price? Those queens are reared with the greatest care that can be given to queen-rearing, and I positively guarantee that you cannot buy any better. A limited number of extra-fine selected tested queens that would make fine breeding queens at $4.00 each. Safe delivery and entire satisfaction positively GUARANTEED.

MY PRICES—Untested: 1, $1.25; 6, $6.50; 12, $12.00; 100, $85.00. Selected Untested: 1, $1.50; 6, $7.00; 12, $13.00; 100, $90.00. Tested—1, $2.50; Selected Tested, $3.00

POUND PACKAGES WITH SELECTED UNTESTED QUEENS, Shipment by return express: 1-lb. packages, 1 to 12, $3.75 each; 12 or more, $3.50 each. 2-lb. packages, 1 to 12, $5.00 each; 12 or more, $4.75 each.

The Farmer Apiaries, Ramer, Alabama.

QUEENS

The successful beekeeper is the one who has the strongest colonies just as the honey flow opens. Do you know of anything that gives more downright pleasure to the beekeeper than to have all colonies extra strong, to have all hives filled with emerging brood, and to have hives and supers crowded with bees just as the honey flow begins? And when a thunder storm suddenly comes up, doesn't it make one's soul glad to see the beautiful yellow bees pour into their hives in countless hordes so as to darken the sky? If a large percentage of your colonies are not in this condition, there is still something to be desired in your management. In a majority of the cases where indifferent work is accomplished by certain colonies, it is due to old or inferior queens.

Many have noticed a marked increase in the amount of honey secured after purchasing some of our queens and requeening with them or their progeny. Then again, it is a great pleasure to work with gentle bees. Isn't it a plaguy nuisance to have cross blacks or hybrids and have the pesky things dancing around in front of your face for hours at a time? Our bees are never guilty of such indecorous conduct.

Our cells are built in powerful colonies, made excessively strong by adding brood taken from other colonies, so that the larva in the queen-cell has more royal jelly than it can possibly consume. Scientific research has proved what we have long known in a practical way—the magic of royal jelly. Our embryonic queens have it in abundance. In addition, our queens are not hatched in cell protectors or nursery cages so that the emerging queen has every opportunity to measure up to the high standard for which our queens are noted. The strongest guarantee goes with every queen.

Queen Prices

Before August First.

1 to 4 inclusive,	$2.50 each
5 to 9 inclusive,	2.45 each
10 or more.....	2.40 each

After August First.

1 to 4 inclusive,	$2.00 each
5 to 9 inclusive,	1.95 each
10 or more.....	1.90 each

Breeding Queens,
for the season,
$10.00 each.

A card will
bring our
1922 catalog.

JAY SMITH, Route 3, VINCENNES, IND.

Queens---- Rhode Island ---- Queens

Italian Northern-bred queens. Very gentle and hardy. Great workers. Untested, $1.25 each; 6 for $7.00.

Queens delivered after June 1.

O. E. TULIP, Arlington, Rhode Island.
56 Lawrence Street.

THREE-BAND QUEENS.

As good as can be found in Beedom. May and June:

Untested	$1.25;	$13.50 doz.;	25, $1.00 each
Select Untested..	1.50;	16.20 doz.;	25, 1.25 each
Select Tested....	2.50;	27.00 doz.;	25, 2.00 each

All queens fully guaranteed.
Send for circular.

Herman McConnell, Robinson, Illinois.

BEES
QUEENS
FROM GEORGIA

THREE-BANDED ITALIANS

QUEENS—Untested, $1.00. Tested, $1.50. BEES—1 pound, $2.00; 2 pounds, $4.00; 3 pounds, $6.00. NUCLEI—1-frame, $3.00; 2-frame, $4.00; 3-frame, $6.00. Discounts on quantity orders. Your satisfaction guaranteed. Disease resisting, and from yards certified free from disease. Send us your list of supply needs.

MICHIGAN HONEY PRODUCERS EXCHANGE. INC., 5495 Grand River Avenue. Detroit. Mich.

MAY ANNOUNCEMENT

Bee Supplies

They are all "Root Quality." Our line is complete. You will do well by getting your supplies early. Send for our catalog.

Beginner's Outfits

We are offering a New Outfit, very moderate in price. Send for circular.

Friction Top Pails

2½-lb. cans, 5-lb. and 10-lb. pails. New prices now in effect. How many do you want?

"A" Grade Paste

For tin pails—it sticks. One pint, 25c; one quart, 45c; one gallon, $1.50. Remember **it sticks.**

A Million Berry Baskets

and crates to hold them. "A" grade wood baskets. Wax-lined paper baskets. Send for price list.

Beeswax Wanted for Cash or Goods

M. H. HUNT & SON

510 N. Cedar Street. LANSING, MICHIGAN

Achord's Italians Are Good Bees

Whether you have only a few colonies or five hundred, we believe you will like them and they will prove a worthy addition to your yard. They are a bright, hustling, three-banded strain bred primarily for honey production, but also for gentleness and color. We have spared neither labor nor expense to make them the very best. We begin shipping about April 15th.

Price of Packages, April and May, F. O. B. Shipping Point, by Express.

1-pound package	$2.25	25 or more	$2.10	50 or more	[illegible]
2-pound package	3.75	25 or more	3.50	50 or more	3.35
3-pound package	5.25	25 or more	5.00	50 or more	[illegible]

Add price of queen to package price given above.

Price of Queens, April and May.

Untested, each	$1.25	Ten or more	$1.15 each	25 or more	$1.00 each
Select Untested	1.35	Ten or more	1.25 each	25 or more	1.15 each
Tested, each	2.00	Ten or more	1.75 each		

We guarantee safe arrival and satisfaction.

W. D. ACHORD, FITZPATRICK, ALABAMA.

Over 200 Miles
of Pure Sheeted Beeswax

Wax made into Airco Foundation and sold during the single month of March, 1922.
Over 27 tons were made and sold from Medina.

[illegible] AIRCO.

Here is a Scientific Fact That Will Interest Every Beekeeper

Authorities have estimated that it takes about 15 pounds of honey to pro- [illegible] if the bees have to draw out combs without having full sheets of foundation to start on, they consume about 15 pounds of honey for each pound of wax produced in comb-building. If given comb foundation to work upon, this much [illegible]

Can any beekeeper afford to go without full sheets of foundation in his [illegible]

It will pay you well to save the bees' time and energy by getting AIRCO foundation—the only foundation made which has the perfect cell base.

Send for sample of Airco Foundation.

Our New Indestructible Combs

For years we have been experimenting on non-sagging, indestructible wax foundation. Our experiments have included wires incorporated in the comb foundation, foundation with wire-cloth base, as well as foundation having a base of thin sheet metal, celluloid, cloth, bakelite, cardboard, fibre and wood veneer. So far, the wood-base foundation is away ahead of anything else we have tried out. Made up with the thin top-bar frame, allowing for two full rows of added cell-space, these combs allow from 20% to 25% more worker brood area, as no drone comb is made on these combs. Sagging is impossible.

We are now in position to furnish beekeepers with a few frames with this foundation for experimental purposes. Supplied only in thin top-bar frames ready for use at 50c each, or $5.00 for 10. For the present season we will not be able to supply more than 10 frames to any one beekeeper, as we are already far behind on orders.

We would like the opinion of beekeepers on this new product.

THE A. I. ROOT COMPANY
"[illegible] Years in the Bee Supply Industry"
MEDINA, OHIO

New York, Chicago, Philadelphia, St. Paul, Indianapolis, Norfolk, New Orleans, Syracuse.
Subsidiary Companies: Council Bluffs, San Antonio, Ingersoll, Ontario.

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Gleanings
in
Bee Culture

"The Clover's in the Bloom."

VOLUME L JUNE, 1922 NUMBER 6

$1 Order Your Queens Now $1

QUEENS OF SUPREME QUALITY.

Just think of it. Only $1 for one of my bright three-banded northern-bred Italian queens, after 19 years of select breeding. I have produced a strain of bees that get the honey and stand the northern winters. Last year every order was filled by return mail. Expect to do the same this year. This is the kind of letters I receive daily:

> "Dear Mr. Major: How early in spring could you fill an order for one dozen Italian queens? My experience and observation with your strain of Italians have shown them to be extremely gentle, superior as workers and unexcelled in the beautifully white and even capping of the honey. Yours very truly,
> "Orel L. Hershiser."

Mr. Hershiser is one of our state inspectors and has been a beekeeper almost all his life; also inventor of the Hershiser wax-press. Does he know good bees when he sees them? Does a duck swim? I guarantee pure mating, safe arrival, free from disease and health certificate furnished with each shipment.

Select Untested, from 1 to 100, $1.00 each.
Select Tested, $1.50 each.
Extra-Select Breeders, $5.00 each.

All candy in queen-mailing cages mixed to government regulations; all orders greatly appreciated and acknowledged the same day received.

H. N. MAJOR, SOUTH WALES, N. Y.

"Griggs Saves You Freight"

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to get Quick Service on

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And the Quality We Handle
Is Always the Best.

SPECIAL DISCOUNT

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List of Goods Wanted.

BEESWAX AND HONEY

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for Supplies.

Free Catalog.

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TOLEDO, OHIO.

"Griggs Saves You Freight"

1922 Bees and Queens of Quality 1922

Get your orders in early.

3000 Nuclei headed with young Italian Queens ready to serve you on early spring orders.

April, May and June

Untested Queens......	$1.50;	25 to 99, $1.30
Sel. Untested Queens..	1.75;	25 to 99, 1.50
Tested Queens	2.25;	25 to 99, 2.00
Select Tested Queens..	2.75;	25 to 99, 2.25

July to November

Untested Queens.....	$1.25;	25 to 99, $1.00
Sel. Untested Queens..	1.50;	25 to 99, 1.25
Tested Queens	2.00;	25 to 99, 1.50
Select Tested Queens..	2.25;	25 to 99, 2.00

Write for prices on 100 or over.

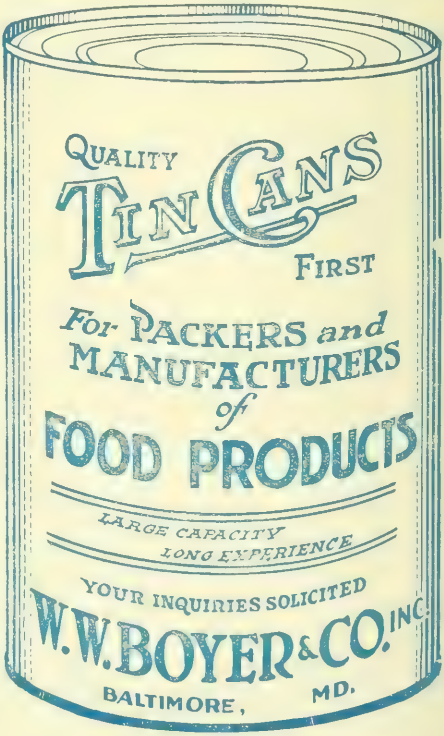
1 1-frame Nucleus with Tested Breeding Queen	$10.00
1-pound Package Italian Bees.......	$2.25
2-pound Package Italian Bees.......	3.75
3-pound Package Italian Bees.......	5.25

Quantity prices on application.

Safe arrival and satisfaction
guaranteed to any point
in the United States.

THE A. I. ROOT CO. OF TEXAS

BOX 765, SAN ANTONIO, TEXAS.



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Entered as second class mail matter at the Postoffice at Medina, Ohio. Published monthly.
Percentage of reading matter in this issue, 58.5 per cent; advertising, 41.5 per cent.

THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

Editorial Staff

Geo. S. Demuth and E. R. Root	A. I. Root	H. H. Root	H. G. Rowe
Editors	Editor Home Dept.	Assistant Editor	M'n'g Editor

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We also manufacture Hoffman frames, dovetailed beehives, etc. Quality unexcelled; prices on request.

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(Manufacturers of Weed Process Foundation.)

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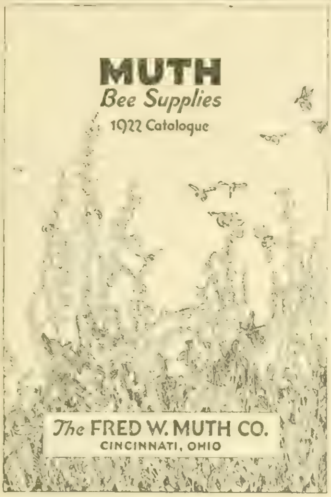

You need our new 1922 bee supply catalog more than ever before. Have you received one? Many new articles are listed for the saving of labor and greater honey production. Our attractive prices, superior quality and prompt service will always be appreciated by beekeepers.

Send a list of your requirements to us.

THE FRED W. MUTH COMPANY,
Pearl and Walnut Streets,
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Just a reminder that our sections are made from Northern Wisconsin basswood; this makes them JUST A LITTLE BETTER. This basswood is all winter-sawed, that's why our sections are JUST A LITTLE WHITER and look JUST A LITTLE BETTER. We are working overtime to give our customers JUST A LITTLE BETTER SERVICE.

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Have you our 1922 catalog? If not, write us for one today.

The A. I. Root Company
873 Massachusetts Ave.,
Indianapolis, Ind.

HONEY MARKETS

U. S. GOVERNMENT MARKET REPORTS.

Information from Producing Areas (First half of May).

CALIFORNIA POINTS.—Continued cool and foggy weather with occasional showers has retarded the new honey crop, until it is not expected that new stock will be on the market in appreciable quantities before the 20th or 22d of May. The market is in a waiting position, as the old crop is practically cleaned up, and no sales of new stock have been reported. Dealers report a few purchases extracted honey from growers at 6c for light amber sage, 8c for extra light amber, and 9c for white sage.

INTERMOUNTAIN REGION.—In the northern part of the area, the season is cold and wet, and two to four weeks later than usual. Many colonies are reported light in stores, and considerable feeding has been necessary this spring. One correspondent reports that even colonies which went into winter quarters with 40 lbs. of honey must be fed this spring. In spite of cool weather fruit and dandelion are in full bloom, giving impetus to brood-rearing, and prospects are good for abundant flow from alfalfa and sweet clover. Bees building up fast and increasing in strength rapidly. No carlot sales reported during past two weeks. In less-than-carlots, white sweet clover and alfalfa extracted has been selling in 60-lb. cans at a range of 8½-10c per lb., mostly 8½c for shipments of any size. Sales of No. 1 and fancy white comb reported at $4.00, and $3.00 for amber. For yellow beeswax, beekeepers are receiving 20-24c per lb. cash, or 26c in trade. In the Salt River Valley section of Arizona considerable feeding has been necessary, due to early breeding up from early pollen. Good prospects for mesquite flow.

TEXAS POINTS.—The crop is generally two to four weeks late. Too much rain thus far for much mesquite flow, but it is starting to bloom in some sections. Fine flow reported now from catsclaw. Yield from other flora expected to be good if clear sunshiny weather is present, but excessive rain will cut the early spring crop to below normal. Some beekeepers have begun to extract and comb will soon be ready to take. Good demand reported for early honey, especially for chunk honey. White extracted is nominally on a basis of 8½c per lb. in cases of two 60-lb. cans, and 14c per lb. for white chunk in the same container. Some white mild chunk honey reported selling in small containers in 60-lb. cases as follows: in 10-lb. pails, $8.40 per case; 5-lb. pails. $9.00; 3-lb. cans, $9.60 per case; in less-than-carlot quantities.

EAST CENTRAL AND NORTH CENTRAL STATES.—Largest flow in years reported from dandelion and fruit bloom, which should make up part of the present deficiency of stores in the colonies. Clover outlook also good. Demand is not active, and some extracted will be carried over. Most beekeepers, however, report supplies exhausted long ago. Packers reported offering 11c per lb. delivered for extracted white clover in large lots, but no sales reported.

PLAINS AREA.—Condition of honey plants greatly improved, due to an abundance of moistures, and beekeepers feel much encouraged. Bees building up rapidly. Many colonies reported to be filling supers, which is unusual for this time of year.

SOUTHEASTERN STATES.—Conditions differ widely in different states. In Alabama the early flow is reported as unusually good with many hives storing supplies. Clover flow commences about May 20. Few sales tupelo reported to grocers and hotels at 10c per lb. in small containers Saw palmetto is said to be yielding a great flow of fine quality nectar in Florida, the best in years. South Georgia, however, reports a more discouraging situation. Alternating dry weather, cold spells, showers and dry winds have given the bees little opportunity to store nectar, and even if the gallberry flow lasts a week longer it is said that not over half a normal crop will be harvested in this section.

NORTHEASTERN STATES. — Recent frosts have not greatly affected the flora, and prospects for a good honey crop are excellent. Fruit bloom is stimulating breeding and colonies are building up very fast. Swarms reported early as May 2 in northeastern Pennsylvania. Abundant supply of maple syrup causing extracted honey to move slowly.

CUBA.—Shipments to Holland in barrels continue very heavy at 56c a gal., including cost and freight. Price f. o. b. Cuba 4c per lb. Beeswax offered at 21c per lb.

Telegraphic Reports from Important Markets.

BOSTON.—Limited demand for extracted and very light demand for comb. California white sage firmly held, other kinds steady. Comb: Sales to retailers, New York, 24-section cases No. 1 white clover $6.50-7.00. Extracted: Sales to confectioners and bottlers, Cuban, amber, 80-85c per gal. California, white sage 15-16c per lb. Brokers' carlot quotations, delivered Boston basis, per lb., California, white sage, none offered, light amber 8c, amber 7c.

CHICAGO.—Supplies believed only moderate. Slightly better movement, market about steady. Sales to bottlers, bakers and wholesale grocers, per lb., Nevada and Colorado, mixed alfalfa and clover white 10-11c, light amber 9-9½c, dark around 8c. California, white sage 10-11c, mixed mountain flowers light amber 9c. Wisconsin and Michigan, mixed white clover and alfalfa, and some straight clover, 11-12c, basswood mostly 12c. Comb: Demand and movement very slow, market weak . Sales to retailers, 24-section cases Colorado and Montana, mixed clover and alfalfa No. 1, $4.00-$4.50; No. 2, $3.00-3.50. Beeswax: Receipts light. Market stronger and prices may go higher. Few small sales reported to laundry supply houses, Montana and Wyoming, light 33c per lb.

PHILADELPHIA.—Supplies generally light but demand is limited. Market slightly stronger. No sales reported, but one dealer reports a purchase of Cuban amber in barrels at 63c per gal. f. o. b. Philadelphia. Beeswax: Receipts increasing. Demand moderate and improving, market stronger. Sales to manufacturers, per lb., African, dark, 20-21c. South American, light 25½-26½c.

ST. LOUIS.—Demand light, practically no movement, market very dull. Comb: Sales to wholesalers and jobbers, in 24-section cases, Colorado and Idaho, white clover and alfalfa No. 1 medium $5.50-6.00. Extracted: Sales to wholesalers and jobbers, per lb. in 5-gal. cans, California, light amber alfalfa 9-10c, mostly around 9c. Beeswax: No receipts reported during past two weeks. Market nominal, practically no change in prices. Ungraded average country run quoted to jobbers nominally 23c per lb.

NEW YORK.—Both domestic and foreign receipts light. Supplies limited. Demand moderate. market steady. Extracted: Spot sales to jobbers. wholesalers, confectioners, bakers and bottlers, domestic, per lb., California, light amber alfalfa 8-8½c, light amber sage 9-10c, white sage 11-12c, white orange blossom 12-13c. Intermountain region, white sweet clover 10½-11c. New York, white clover 10½-11½c. New York, white clover 10½-11½c, few 12c, buckwheat, mostly 7c. South American refined best 65-70c per gal. Comb: No sales reported. Beeswax: Foreign receipts limited. Demand moderate, market firm. Spot sales to wholesalers, manufacturers and drug trade, South American and West Indian. crude light best 27-30c, poorer low as 24c. African, dark 18-20c.

From Producers' Association.

Demand for comb honey in less than carlot has improved, and sales have been better than expected. A little interest is also shown in carlots and some business may result. Extracted fancy white suitable for bottlers is closely cleaned up and but very little in carlot available.

The Colorado Honey Producers' Ass'n.
Denver, Colo. F. Rauchfuss, Sec.

The A. I. Root Company's Quotation.

We are in the market for one carlot of white clover extracted honey for which we will pay 11½c cash f. o. b. Medina: one carlot of sweet clover extracted honey for which we will pay 8½c f. o. b. shipping point; one carlot of water white button sage honey (new crop) for which we will pay 9c f. o. b. shipping point; and one carlot of light amber extracted honey for which we will pay 6c f. o. b. shipping point. Samples to be submitted. Not in the market for comb.

(No shipments of honey will be accepted under any conditions except as ordered by our purchasing department.)

The A. I. Root Company.

The Opinions of Honey Producers Themselves as Reported to Gleanings in Bee Culture.

Early in May we sent to actual honey producers and some associations the following questions:

1. What portion of the 1921 crop, if any, is still in the hands of producers in your locality? Give answer in per cent.
2. What price are producers receiving, if still having honey for sale, at their station when sold in large lots? (a) Comb honey? (b) Extracted honey?
3. What are prices to retailers in small lots? If producers are sold out give prices received by others when selling in your market. (a) Comb honey per case, fancy or No. 1? (b) Extracted honey in 5-lb. pails or other retail packages?
4. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair, rapid.
5. How does the number of colonies in your locality that are in condition to store surplus honey compare with the number last year? Give answer in per cent.
6. What is the condition of the bees at present as compared with normal? (a) As to strength of colonies? (b) As to amount of stores?
7. What is the condition of the honey plants at this time, compared with normal? Give answer in per cent.
8. How does the early honey flow, if any, in your locality compare with normal thus far? Give answer in per cent.

The answers as returned by our honey and bee reporters are as follows:

State.	Reported by:	Crop	In large lots.		To Retailers.		Move-	No.	Condition.		Plant	Honey
		Unsold.	Comb.	Extr.	Comb.	Extr.	ment.	Col.	Strgth.	Stores.	Cond.	Flora.
Ala.	J. M. Cutts	8				$0.60	Fair	110	100	100	100	200
Ala.	J. C. Dickman	8	$5.75	$.09	$6.00	.90	Fair	125	100	100	100	100
Ark.	J. Johnson	0			6.00	.90		100	100	100	100	100
B. C.	W. J. Sheppard	0						75	75	75	100	
Cal.	L. L Andrews			.10	7.20	.95	Fair	90	100	50	85	25
Cal.	M. H. Mendleson	0					Fair		50	10		
Cal.	M. C. Richter	10		.12		1.50	Fair	60	90	60	90	80
Cal	M. A. Saylor	1			6.00	1.00	Fair	100	95	90	100	100
Colo.	B. W. Hopper	0					Slow	100	100	100	100	200
Colo.	J. A. Green	1			4.50	.62	Slow	100	90	95	100	100
Colo	J. H. Wagner	40	3.00	.14	3.75	.90	Fair	70	75	0	80	
Conn.	A. Latham	0					Slow	125	110	85	100	100
Fla.	C. C. Cook			.10		.65	Fair	140	125	125	100	100
Fla.	H. Hewitt	0				.85	Slow	100	100	100	125	125
Fla.	W. Lamkin	0					Slow					
Ga.	J. J. Wilder	10	5.25	.06		.70	Fair	90	90	100	100	115
Ill.	C. F. Bender	0			6.00		Good	95	110	75	120	75
Ill.	A. L. Kildow	0						110	135	100	125	100
Ind.	T. C. Johnson	0			5.75	.85	Slow	100	100	100	110	100
Ind.	E. S. Miller	20			6.00	1.00	Slow	100	100	95	100	125
Ind.	J. Smith	0	6.50				Fair	75	100	50	100	150
Iowa.	E. G. Brown	8		.10	4.50	.80	Fair	90	100	80	100	100
Iowa.	F. Coverdale	0			6.00	1.00	Fair	80	100	125	100	135
Iowa	W. S. Pangburn	10		.14		.87	Slow	75	90		100	
Kan.	J. A. Nininger	0			5.00	.75	Slow	100	100	80	100	100
Ky.	P C. Ward	1					Slow	125	120	120	100	125
La.	E. C. Davis	10		.09		.75	Fair	100	100	100	100	150
Me.	O. B. Griffin	2			7.00		Slow	100	100	85	90	
Md.	S. G. Crocker, Jr.	10			5.00	1.25	Slow	100	80	75	75	50
Mass.	O. M. Smith	0					Slow	100	100	90	100	
Mich.	I. D. Bartlett						Fair	100	110	110	125	100
Mich.	F Markham	5		.12		.80	Slow	150	125	125	100	100
Miss.	R. B. Willson	3		.08			Slow	110	100	100	100	75
Mo.	J. F. Fisbeck						Slow	100			110	
Mo.	J. W. Romberger	0			6.25	.90	Fair	100	100		90	100
Mont.	R. A. Bray	10	4.50	.11	5.00	.65	Fair	90	90	85	90	90
Nev.	E G. Norton	5	5.00	.08			Slow		100	100	70	
Nev.	L. D. A. Prince.						Fair		50	75	100	100
N. Y.	Adams & Myers				6.00	1.00	Fair	100	125	75	40	100
N. Y.	G. B. Howe	0				1.10	Fair		100			
N. Y.	F. W. Lesser	0			4.80	1.00	Slow	125	100	100	100	125
N. C.	C. S. Baumgarner							100	100	100	110	110
Ohio.	E. G. Baldwin	0						95	100	100	90	100
Ohio.	E. D. Hiatt	2			5.50	1.00	Fair	100	100	80	80	95
Ohio.	F. Leininger		4.80	.15					150	200	100	100
Ohio.	J F. Moore	3			4.00	.75	Slow	100	100	100	100	90
Okla.	J. Heueisen	0						80	75	60	100	100
Okla.	C. F. Stiles	0			5.25	1.25	Slow	85	90	80	100	100
Ore.	E. J. Ladd						Slow	90	90	60	100	20
Ore.	H. A. Scullen	0				1.25	Fair	100	90	90	100	100
Pa.	H. Beaver	1				.60	Slow	100	100	100	90	
Pa.	D. C. Gilham	5			7.00	1.00	Slow	110	105	95	100	105
Pa.	G. H. Rea	0			6.50		Fair	100	100	100	100	100
R. I.	A. C. Miller	0				1.75	Slow	110	110	150	100	70
S. C	A. S. Conradi	0					Rapid	100	100	100	100	100
Tenn.	J M. Buchanan.					1.00	Slow	100	100	100	90	100
Tex.	T. A. Bowden	6				.75	Slow	100	100	50	90	50
Tex.	J. N. Mayes	1	3.00	.08			Rapid	110	110	110	125	125
Utah.	M. A. Gill					.50	Fair	80	80	90	100	75
Vt.	J. E. Crane	0				1.25	Slow	110	120	100	100	100
Va.	T C. Asher						Fair	100	100	90	90	95
Wash.	W. L. Cox	0			6.50		Fair	90	85	90	90	85
Wash.	G. W. B. Saxton	20		.10		.75	Slow	80	75	100	75	100
Wash.	G. W. York	0			5.50	.80	Slow	65	75	50	75	
W. Va.	W. C. Griffith	0			8.50		Slow	90			100	
Wis.	G. Ditmer	15	3.60	.10	4.80	.75	Slow	90	100	100	100	100
Wis.	E. Hassinger, Jr.	0				.85	Slow	105	100	100	100	100
Wis.	H. F. Wilson	2		.11		1.25	Slow	92	100	100	75	100
Wyo.	A. D Brown	22	4.50	.09		.85	Slow		50	40	110	

NEW BINGHAM BEE SMOKER

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WOODMANS FAMOUS BEE-WARE

The Smoker

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Comes with metal legs, metal binding and turned edges. The four larger sizes have hinged covers. The fire grate is of very substantial material, with an abundance of draft holes, the 4-inch size having 381 holes, equal to an opening of 2-inch square.

A valve in the bellows of the larger sizes makes the Smoker respond to the most delicate touch.

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Write for our complete catalog of bee supplies and accessories. Special circular of all sizes of Bingham Smokers free for the asking.

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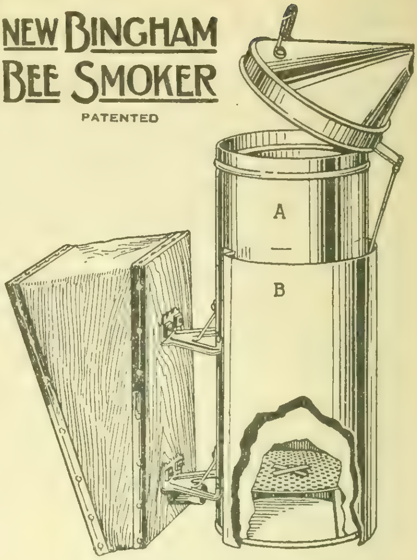
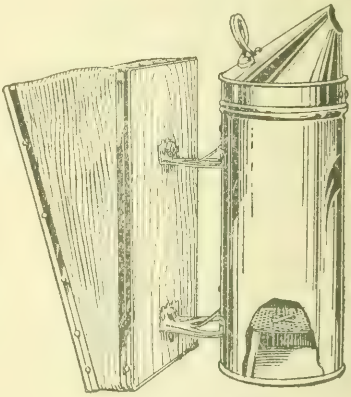
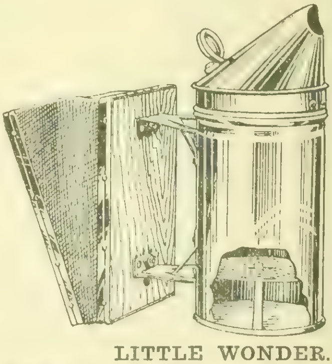
238 Scribner Ave., N. W.
GRAND RAPIDS, MICH., U.S.A.



BIG SMOKE—With Shield
Fire Pot, 4 x 10.

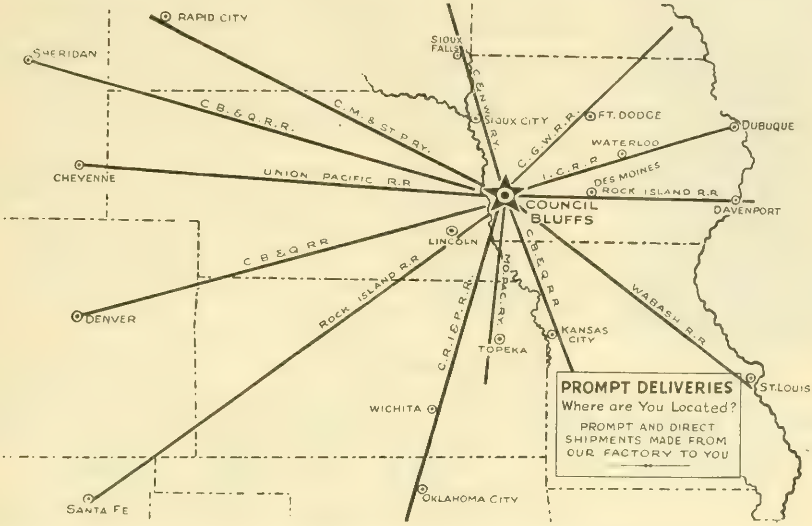


CONQUEROR.
Fire Pot, 3 x 7.



LITTLE WONDER.
Fire Pot, 3 x 5½.

WANT PROMPT SHIPMENTS?


RAPID CITY
SHERIDAN
SIOUX FALLS
C. B. & Q. R. R.
C. M. & ST. P. RY.
C. & N. W. RY.
SIOUX CITY
FT. DODGE
DUBUQUE
C. G. W. R. R.
WATERLOO
I. C. R. R.
DES MOINES
CHEYENNE
UNION PACIFIC R. R.
ROCK ISLAND R. R.
DAVENPORT
COUNCIL BLUFFS
LINCOLN
C B & Q RR
ROCK ISLAND R. R.
MO. PAC. RY.
C. B. & Q. R. R.
WABASH R. R.
DENVER
C. R. I. & P. R. R.
KANSAS CITY
TOPEKA
PROMPT DELIVERIES
Where are You Located?
PROMPT AND DIRECT SHIPMENTS MADE FROM OUR FACTORY TO YOU
ST. LOUIS
WICHITA
OKLAHOMA CITY
SANTA FE

Time is the essential factor in your success in the days just ahead.

Our dealers are getting replenishment orders over this network of roads, in quantity lots. There is a Root dealer near you. Look him up.

Today these dealers and the Council Bluffs organization are ready to serve you, completely and quickly.

AT YOUR SERVICE

FOSTER HONEY & MERC. CO.,
Boulder, Colo.

THE BORTON APIARIES,
Scotland, S. D.

P. J. POOLEY,
Mitchell Trans. & Storage Co.
Mitchell, S. D.

C. F. BUCK,
Augusta, Kans.

GRISWOLD SEED CO.,
Lincoln, Nebr.

THE WERTZ SEED CO.,
Sioux City, Ia.

THE RAPID CITY IMPLEMENT CO.,
Rapid City, S. D.

THE RODMAN COMPANY,
301 Delaware Street,
Kansas City, Mo.

CARHART LUMBER CO.,
Wayne, Nebr.

LODGE GRASS APIARIES,
Lodge Grass, Mont.

THE A. I. ROOT COMPANY OF IOWA
COUNCIL BLUFFS, IOWA

QUEENS

Queen-rearing at our apiary is now in full blast. The weather is ideal, and flowers are giving up their nectar in a manner most conducive to the production of high-grade queens. No work nor expense is spared to produce the queens we send out. Each queen is reared by me personally and is the very best I know how to produce.

REMEMBER that I guarantee pure mating, safe arrival and that every queen is first class in every respect. If any proves otherwise I want to know of it, that I may have the opportunity of replacing her.

REMEMBER also it is the colony headed by a good queen that gets the big yield of honey and I believe you will find mine are just what you want.

> ''Several years ago I had two of your queens and found them very good, in fact better than any other Italians I ever had.''—J. F. Fattig, Pataskala, Ohio.
>
> ''Yes, the other breeder I got of you in 1919 was the finest queen I ever saw, all the way around.''—Cecil B. Hayes, Miami, New Mexico.
>
> ''The queen I got of you last fall is the best I ever saw.'' Loel M. Seelye, Avon, New York.

QUEEN PRICES

BEFORE AUGUST 1.		AFTER AUGUST 1.	
1 to 4 inclusive	$2.50 each	1 to 4 inclusive	$2.00 each
5 to 9 inclusive	2.45 each	5 to 9 inclusive	1.95 each
10 or more	2.40 each	10 or more	1.90 each

Breeding queens for the season....$10.00 each.
Jay Smith Introducing Cage....75c each.

Send for our Queen Catalog, and also folder describing our Introducing Cage, which makes queen introduction safe and sure.

JAY SMITH, Route 3, VINCENNES, IND.

Another $200.00 Queen

A descendant of the Root's famous two-hundred-dollar queen was shipped by us to Mr. C. B. Hamilton of Michigan on April 15, 1921, with a two-pound package of bees and produced 577 finished sections of comb honey that sold for $168.00. (See Gleanings for March, page 167.) Mr. Hamilton says this queen kept 20 Standard Hoffman frames filled with brood during the season. THIS BREAKS ALL RECORDS SO FAR.

We have secured this queen for a breeder and we are now booking orders for her queens at the following prices, safe arrival, satisfaction and freedom from diseased guaranteed.

1 untested	$ 1.00
12 untested	10.00
1 select untested	1.50
12 select untested	13.50

We will have no tested queens from this one ready for shipment before July 1, but can supply tested queens of the same strain at any time.

1 tested	$ 1.75
12 tested	16.00
1 select tested	2.25
12 select tested	20.00

J. M. CUTTS & SON, R. F. D. 1, MONTGOMERY, ALA.

Why These Queens and Bees?

A beekeeper should never buy a queen nor a pound of bees from any queen or bee rearer till he has asked himself this question: ''Why should I buy my queens and bees of this dealer?''

We can answer that question when asked of us very briefly:

For more than 50 years we have been breeding up to the Root Quality Queens and Bees. We do not believe that better bees or queens are reared anywhere in the world today. What we try to do, is to rear THE BEST.

We breed queens with special view to the honey-gathering quality of their bees. We have had this one chief purpose in breeding constantly in mind all these years. We have it uppermost in our minds today.

THE DIFFERENT GRADES OF QUEENS.

Italian queens are distinguished from blacks by three yellow bands on the upper part of the abdomen. Leather-colored Italians show three stripes of dark-yellow leather color.

An untested queen is one which is sold after she is found to be laying, not having been previously tested.

A tested leather-colored queen is one which has been examined by the breeder and her bees found to be uniformly marked with at least three dark-yellow bands.

Select queens of any of the grades are those which show better color, size, shape, etc. Frequently select untested queens develop into fine breeding queens.

PRICE OF QUEENS—Up to June 30.

	1 to 9.	10 to 24.	25 to 49.	50 to 99.	100 or more.
C312000—Untested	$2.00 each.	$1.80 each.	$1.70 each.	$1.60 each.	$1.50 each.
C313000—Select Untested	2.50 each.	2.25 each.	2.10 each.	2.00 each.	1.85 each.
C314000—Tested	3.00 each.	2.70 each.	2.55 each.	2.40 each.	2.25 each.
C315000—Select Tested	3.50 each.	3.15 each.	3.00 each.	2.80 each.	2.60 each.

July 1 to November 1.

	1 to 9.	10 to 24.	25 to 49.	50 to 99.	100 or more.
C312000—Untested	$1.50 each.	$1.40 each.	$1.35 each.	$1.25 each.	$1.15 each
C313000—Select Untested	2.00 each.	1.90 each.	1.80 each.	1.70 each.	1.60 each.
C314000—Tested	2.50 each.	2.35 each.	2.25 each.	2.10 each.	2.00 each.
C315000—Select Tested	3.00 each.	2.85 each.	2.70 each.	2.25 each.	2.40 each.

Note the large saving to be made by taking advantage
of our low prices on quantity lots.

OUR GUARANTEE ON QUEENS.

We guarantee safe arrival of queens sent in mailing cages. We agree to refund the money or replace the queen if the one first sent arrives dead; provided the beekeeper receiving the dead or unfit queen returns her at once and in her own shipping cage, properly marked with name and address of sender. No delay in returning the queen can be permitted. This guarantee applies only on queens sent to customers in the United States and Canada.

PRICES OF BEES IN COMBLESS PACKAGES BY EXPRESS.
Up to August 15.

C310700—1-pound package	$3.00;	25 or more packages, $2.85 each.
C310800—2-pound package	5.00;	25 or more packages, 4.75 each.
C310801—3-pound package	7.00;	25 or more packages, 6.60 each.

Add price of queen wanted to package price given above.

OUR GUARANTEE ON BEES SHIPPED BY EXPRESS.

We agree to make good any loss to bees in transit, provided consignee secures such notation as will cover any apparent damage done while in transit, on express delivery receipt, signed in full by express agent, **receipt to be mailed to us at once** with letter giving full particulars, on receipt of which replacement will be made immediately. **The guarantee does not apply on bees shipped to foreign countries.**

Mail all queen and bee orders direct to Medina or to our nearest branch office.

THE A. I. ROOT COMPANY

WEST SIDE STATION **MEDINA, OHIO, U. S. A.**

Superior Italian Queens

We have had more orders than we could fill each year, yet we are striving just as hard to produce better queens each year as we would if we had more queens than orders, and we believe that each year we are able to produce queens of a little higher quality. We are not in the business for the time being, or to get every dollar out of it we can, but because we like to rear queens and we want to give you value received for your money. After we have reared the best possible queens for you, we want to put them to you, not just alive, so we can get your money, but in the best possible condition. Everything we sell is guaranteed. **AFTER JUNE 15th UNTESTED QUEENS IN LOTS OF 10 OR MORE, 75c EA.**

UNTESTED TO JUNE 15th: One, $1.25; ten or more, $1.00 each.
TESTED TO JUNE 15th: One, $2.00; ten or more, $1.75 each.

——— AFTER JUNE 15th ———

UNTESTED ....One, $1.00; ten or more, $0.75 each.
TESTED ....One, $1.75; ten or more, $1.50 each.

We have 2.000 Tested Queens, reared late last fall that we will supply at our convenience at $1.00 each, or ten or more at 80c each.

THE STOVER APIARIES, MAYHEW, MISS.

A Big Honey Crop

Have you learned the secret of a bumper honey crop? If you will head your colonies with young prolific queens, your yield will surely be greater. Buy your queens from L. L. Forehand. They have been on the market for over twenty years. THEY ARE BRED FROM IMPORTED MOTHERS. They cannot be beaten for honey-gathering, gentleness, prolificness, disease-resisting and non-swarming.

Guarantee

I guarantee every queen will reach you alive, to be in good condition, that she will be purely mated and to give perfect satisfaction. I will return your money or replace queens that are not satisfactory in every way. Safe delivery guaranteed in U. S. and Canada only.

	1	6	12	100
Untested	$1.25	$6.50	$11.50	$0.90 each
Selected Untested	1.50	7.50	13.50	1.00 each
Tested	2.00	10.00	18.50	1.50 each
Selected Tested	2.75	15.00	27.00	2.15 each

Send for circular. It contains useful information.

L. L. FOREHAND, Fort Deposit, Alabama

Collier's Bees and Queens

Breeding Queens Imported from Italy.

THREE-BANDED ITALIANS ONLY.

Shipped by return mail.

Let me have your order for the 1922 season. My queens are bred by men who know how. Every order given my personal attention. All queens reared in strong two-story, ten-frame hives, under natural conditions.

Improve your weak, run-down colonies by using young, vigorous, three-banded Italian Queens from my imported stock.

You take no risk buying from Collier. If you are not satisfied I will replace or refund your money. Safe delivery guaranteed.

Prices: Untested—1, 80c; 6, $4.50; 12, $8.50; 100, $68.00. Select Untested, 1 to 25, $1.00 each. Tested, $2.00, or $20.00 doz. Select tested, $3.00, or $30.00 doz. Pound packages with select untested queen: 1-lb. package, $3.50 each; 2-lb. package, $5.00. Write for prices on larger lots.

D. E. COLLIER

RAMER - - - - ALABAMA

ONLY

90c A QUEEN

QUEENS BY RETURN MAIL

Mr. Beekeeper: We have the stock equipment and experience, and can give you prompt, satisfactory service. We are not going to say that we have the best bees in U. S. A., but we do say that we have as good as can be bought for the money. Give NORMAN BROS.' 3-banded Italian bees and queens a trial and see for yourself. You risk not a brown penny; if you are not satisfied, notify us and we will replace or refund your money. Isn't this a fair proposition to any one that purchases queens and bees? Our bees are hardy, prolific, gentle and honey-gatherers.

Prices:	1	6	12	100
Untested Queens	$0.90	$5.00	$9.00	$70.00
Select Untested.	1.15	6.00	11.00	85.00
Tested Queens...	2.00 each			
Select Tested...	2.50 each			

One 2-lb. package bees, $3.00; 12 or more, $2.85 each. Add prices of queens wanted. We guarantee pure mating, safe arrival and free from all diseases.

Norman Bros. Apiaries

NAFTEL, ALABAMA.

Golden Italian Queens

When you buy you want the best. The Golden Italian Queens are better by the test. Untested, $1.00 each; $10.00 per doz. Selected Untested, $1.25 each, $12.00 per doz. Satisfaction guaranteed.

E. A. SIMMONS

GREENVILLE, ALABAMA.

Four Things to Remember

1. *Quality Queens*
2. *Satisfactory Service*
3. *Reliability*
4. *Dependability*

On these four points I am prepared to take care of your wants.

Untested Italian Queens

June, each, $1.50; 12, $15.00. After July 1, each, $1.25; 6, $7.00; 12, $13.00; 25, $25.00.

Safe arrival and satisfaction guaranteed.

J. B. HOLLOPETER

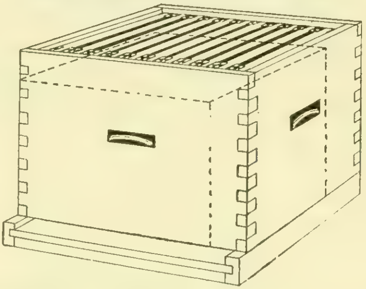
ROCKTON, PENNA.

DON'T BE CONFUSED

¶ In buying a larger hive than the ten-frame Langstroth hive. Quinby invented an eight-frame hive with frames about 11¼ inches deep. It was long ago found inadequate in size and was made into a ten-frame hive, a size we have offered for some years.

¶ Charles Dadant found the ten-frame Quinby depth hive needed another frame. He also found it a beekeeping necessity to change this hive further, and evolved the 1½-inch spacing from center to center of the frames. This is the real principle to be considered in the

MODIFIED DADANT HIVE
(REGISTRATION APPLIED FOR)



Deep frames 11¼ inches. Frame space ventilation, swarm control easier, 6¼-inch extracting frames.

Large one-story brood-nest, adequate winter stores, greater brood-room, standard covers, bottoms.

Present equipment may be used as super equipment on Modified Dadant brood-chambers. Covers and bottoms for this hive are the familiar metal roof cover with inner cover and regular standard bottoms, except for larger dimensions.

The standard of workmanship is "Beeware." Write for free booklet on this hive to

G. B. LEWIS COMPANY, Watertown, Wisconsin.
DADANT & SONS, Hamilton, Illinois.

There's a Distributor near you.

3-Banded *Goldens*

Quality Queens

Our queens are as fine as can be had, reared from the finest strains of Italians, and we feel sure you will be well pleased with our queens, for we spare no trouble whatever to rear as fine a queen as it is possible to rear from the finest honey-gathering strain, so as to be sure to please.

Quality Queens :: Low in Price

Untested.....1 to 12, $1.00 each
Sel. Untested, 1 to 12, $1.25 each
Tested one grade, Select, $2 each

Wings clipped free on request. Entire satisfaction and safe arrival guaranteed in U. S. and Canada.

Ohio Valley Bee Company
Catlettsburg, Ky.

First in Alabama to Ask for and Receive Inspection for Disease. All Apiaries Found Free From Disease.

Certificate Signed:
A. D. Worthington, Inspector.

After twenty-six years of Select Breeding we have a clean, bright three-banded strain of Italian bees that are unsurpassed for their disease-resisting and honey-gathering qualities.

Select Untested Queens, $1.00 each, 12 or more, 90c each.

Select Tested Queens, $1.50 each; 12 or more, $1.40 each.

We guarantee our queens to give absolute satisfaction and to arrive in perfect condition. They have pleased thousands of others. Give them a chance to please you. They know how. Our little booklet free for the asking. It tells all about our bees and how to handle them for best results.

M. C. BERRY & CO.,
Box 697. Montgomery, Ala.

June is the Month of the Busy Bees and Busy Beekeepers

We are ready to supply your needs and fill your orders promptly.

At this time of year you want SERVICE. Try us. We will not disappoint you.

Yours for a season that will be "the best ever."

F. A. SALISBURY
1631 West Genesee Street,
Syracuse, N. Y.

Big Reduction

--ON--

Bee Supplies

Shipping cases.........$30.00 per 100
Slotted section-holders...$3.00 per 100
Sections, 1⅞, No. 1...$10.00 per 1000
Job lots of frames, regular size...............$3.00 per 100
Standard Hoffman frames, 9⅛ deep ....$4.50 per 100
Unspaced wedged top-bar frames, 9⅛ deep...........$2.75 per 100

Send for Catalog and Price List.

CHARLES MONDENG
146 Newton Avenue N. and
159 Cedar Lake Rd.
MINNEAPOLIS, MINN.

Better Way to Garden

Don't do garden work the slow back-breaking way. You can grow a far better garden, easier and with much less time and work.

BARKER

WEEDER, MULCHER AND CULTIVATOR
THREE MACHINES IN ONE

Simply push the BARKER along the rows (like a lawn mower). Eight blades revolving against a stationary underground knife destroy the weeds and in same operation break up the surface crust into a **level, porous, moisture-retaining mulch.** Aerates soil. Intensive cultivation. "Best Weed Killer Ever Used." Has leaf guards, also shovels for deeper cultivation. A boy can run it—do more and better work than 10 men with hoes.

Write Us Today for FREE Booklet.

Let us tell you about this machine and how to raise bigger, better gardens—make gardening a pleasure. A valuable book, illustrated. Gives prices, etc. A card brings it. Write us today. Use coupon below.

BARKER MFG. CO.
Box 23 DAVID CITY, NEB.

GARDENING for Profit and Pleasure

Barker Mfg. Co., Box 23, David City, Neb.
Gentlemen: Send me postpaid your free booklet and Factory-to-User offer.

Name ....

Town ....

State................ Box or RFD............

SCOTT QUEENS ARE GOOD QUEENS

MY QUEENS ARE GETTING RESULTS.

Among my hundreds of colonies and for my customers. One writes: ''Dear Mr. Scott: Please book me for ½ dozen queens. Those I got from you last season have made 150 lbs. comb honey so far this season. Yours truly.''—(Name on request.)

UNTESTED GOLDEN OR THREE-BANDED QUEENS.

June 1 to July 15: One, $1.50; six, $8.00; dozen, $15.00. Pure mating; safe arrival and satisfaction. No disease. Circular on request.

ROSS B. SCOTT, LA GRANGE, INDIANA.

Thagard's

Italian Queens

Bred for Quality

The new Postal Law restricts the importation of queens from Italy, owing to the mite which causes the Isle of Wight disease.

Dr. E. F. Phillips has examined our imported bees from Italy and reports there is no evidence of the mite, nor Isle of Wight disease.

We are breeding from breeders obtained from the foremost strains in Italy. And mated to our own famous strain. Universities, Agricultural Colleges, Demonstration Agents, backlotters, America's largest honey-producers and queen-breeders have purchased thousands of our queens bred from our imported stock this spring.

Since the new Postal Law went into effect the demand is growing greater daily. WHY? Because for the next few years there will be no new blood imported from Italy. In buying our queens you are assured of getting imported stock, and free of disease. Every queen is guaranteed to please you or your money refunded.

UNTESTED QUEENS, EACH—1 to 11, $1.00; 11 to 49, 95c; 49, to 99, 80c; 100 or more, 75c.

The V. R. Thagard Co.
Greenville, Alabama

We Are Prepared to Take Care of Your Rush Orders

We ship thousands of bees all over the U. S. A. and Canada. Special attention given to small orders. Queens bred from the best honey-gatherers with all other important points taken into consideration. Safe arrival guaranteed. Send for special circular for shipping after May 15th. Can take care of your rush orders for shipping before May 15, at the following prices:

1-pound package, $2.60 each; 25 or more, $2.50 each,
3-pound package, $5.25 each; 25 or more, $5.00 each.
2-frame Nuclei, $3.75 each; 3-frame Nuclei, $5.25 each.
2-frame with 1 pound extra bees..........$5.25 each.
1-frame with 2 pounds extra bees..........$5.25 each.
(Queens free when ordering packages.)

PRICES OF QUEENS.

Untested: 1, $1.05 each; 25 or more, 91c each; per 100, $85.00.
Selected Untested, $1.30; 25 or more, $1 each.
Tested, $1.75; 25 or more, $1.50 each.

NUECES COUNTY APIARIES, CALALLEN, TEXAS
E. B. AULT, Proprietor

3000 Monthly Capacity **65c EACH** *Prompt Shipment*

Untested Queens

In order to keep working at full capacity we are making a big cut in the price of

Forehand's Three-Bands
The Thrifty Kind

Thirty years of experience go into the rearing of our queens. Select breeding for over a quarter of a century brings them up to a standard **surpassed by none but superior to many.**
We guarantee pure mating and satisfaction the world over. Safe arrival guaranteed in the U. S. and Canada. For the balance of the season we are selling bees in combless packages only. Send in your order at once.

UNTESTED QUEENS EACH.

1, $1.00; 6 to 11, 95c; 12 to 49, 90c; 50 to 99, 85c; 100 to 249, 80c; 250 to 499, 75c; 500 to 1000, 65c. Prices quoted on other grades upon application.

POUND BEES.

1 one-lb. pkg...$2.00; 25 and over, $1.90
1 two-lb. pkg... 3.50; 25 and over, 3.25
1 three-lb. pkg.. 5.00; 25 and over, 4.75
Catalog sent free.

W. J. FOREHAND & SONS, Fort Deposit, Alabama

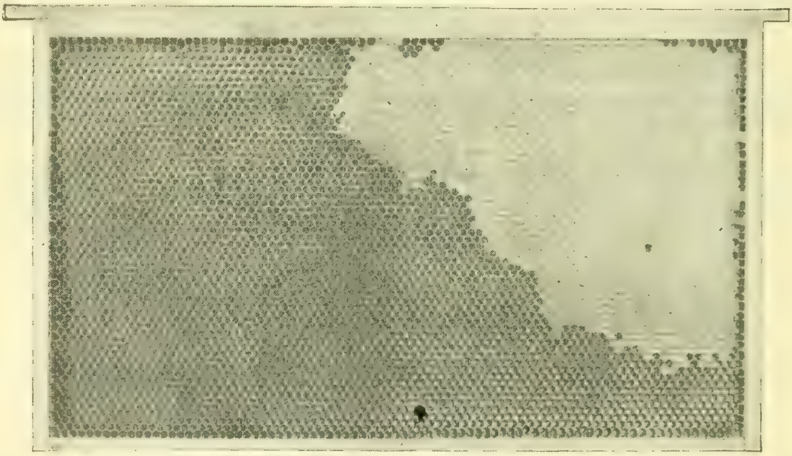
Another Step Forward!

Cuts Out Cost and Labor of Hand Wiring

DADANT'S
WIRED
NON SAG
FOUNDATION
DADANT & SONS
HAMILTON, ILL.
U.S.A.

Makes Non-Sag All-Worker Comb

The Finished Comb



Note completeness of comb and absence of sagging.

TESTED BY TIME AND USE. Dadant's Wired Foundation is not an experiment of a few months' time, but it is a carefully evolved specialty of a life-time of foundation specialists. It has also been thoroughly tested for several years in large apiaries in all parts of the United States. It is adaptable to any size and style of brood or extracting frame.

COSTS NO MORE. Since Dadant's Wired Foundation cuts out the cost and labor of wiring, its extra price of three cents per pound above the catalog prices of old-style foundation is thus more than returned to the beekeeper.

ASK FOR SAMPLES. A small mailing sample sent free on request. Special Offer—A sample of seven sheets, for either split bottom-bar or old-style one-piece bottom-bar frames, will be sent postpaid, to any address in the United States for $1.00. Specify size desired. Only one sample to a person.

DADANT & SONS, Hamilton, Illinois

Wired Foundation is sold by all distributors of Lewis "Beeware" and Dadant's Foundation. Send them your orders. Catalog and Prices on Foundation, Bee Supplies, Beeswax, Wax Working into Comb Foundation and Comb Rendering, for the asking.

GLEANINGS IN BEE CULTURE
JUNE, 1922

EDITORIAL

Danger of Indirect Importation of Bees.

THE editor of The Bee World states in the April issue of that journal that the outbreaks of Isle of Wight disease recently discovered in France and Switzerland "have already been traced to importations from England, and such cases have already been controlled." If this is correct it illustrates the danger of indirect importation, unless the importation of bees into this country can be regulated in some such manner as provided in the proposed law now pending in Congress giving the Secretary of Agriculture the power to exclude bees whenever necessary. Our readers should read carefully the editorial on another page, and if favoring this bill should write at once to their Senators and Representatives asking them to support it.

* * *

What Shall the Harvest Be?

A GLANCE at the figures reported by producers for our market page reveals a promising outlook for beekeeping this season. In most cases the number of colonies is reported as normal or above, and the condition of the colonies as well as the honey plants makes a splendid showing. The recent general rains throughout the clover region are a great help to the clover. The honey is being well cleaned up in the markets, so that the marketing problem looks much brighter than it did a year ago when large stocks were still in the hands of the producers. The prospects at present are indeed encouraging, but the next few weeks will tell the story as to what the harvest will be.

* * *

Establishing Government Color Grades for Honey.

THE Bureau of Crop Estimates and the Bureau of Entomology, working co-operatively, are making a study of the colors of honey in order to work out color standards for extracted honey. This is done by means of a color-measuring device by which all colors can be measured instead of only amber, thus giving accurate color measurements.

After a great variety of samples from all parts of the country have been measured it will be possible to establish grades based on color, and define accurately the limits of each grade, so that in case of dispute it will be possible to determine exactly in which grade the sample in dispute falls.

The establishment of accurately defined grades for honey for the United States by the Department of Agriculture should be of great benefit to beekeepers in marketing their honey.

* * *

Fastening Foundation in Sections.

IN using the Multiplex foundation-fastener or any device for fastening foundations in sections in which a hand tool is used to melt the edge of the foundation, many seem to think that the blocks supporting the sections should be placed on the bench at an angle. For the greatest ease and most rapid work the blocks should be placed in a horizontal position and the operator should stand facing the ends of the section-holders. This permits a free and natural handling of the heated knife, thus avoiding the twisted and cramped position necessary when the blocks are placed at an angle. With the freedom of movement afforded by having the blocks in a horizontal position, the operator can easily fasten the 28 sheets of foundation in less than one minute without reheating the knife.

* * *

Effect of Emerging Bees Upon Swarming.

E. M. COLE, writing in the American Bee Journal, May issue, takes issue with the statement in Farmers' Bulletin 503, published in 1912, to the effect that all effective treatments for swarming, such as shaking, dequeening or separating the brood and the queen, involve "a temporary disturbance in the continuity of the emergence of brood."

This statement was written by the Editor more than 10 years ago, while he was connected with the Bureau of Entomology at Washington, D. C., and today, after 10 years further study of the swarming problem, he can see no reason for changing his opinion in regard to the matter.

Before that statement was written, the bee journals published in the English language were searched from volume I up to that time and an abstract made of every swarm-control plan published. The same thing was done with the books on beekeeping published in English. These abstracts were then carefully studied, and, after eliminating those plans which are not effective in swarm control, the others were sorted into groups on the basis of similarity in principle. Finally, out of the great mass of apparently conflicting methods and opinions, all of the effective remedies for swarming were found to come under three general heads, viz., taking away the brood, taking away the queen and separating the brood and the queen within the hive. One plan involved killing the brood with the uncapping knife, but this is simply one way of taking away the brood. In other words, in the final analysis every one of the hundreds of swarm-control plans thus far given in beekeeping literature either creates a condition of the colony comparable to a certain degree to the recently hived natural swarm or the parent colony.

But the most interesting thing in all this is the fact that every remedy for swarming, that has proven successful thus far, involves ''a temporary disturbance in the continuity of the emergence of brood.''

Whether this break in the emergence of brood has anything to do with the bees' giving up swarming is another question. In writing the bulletin referred to above the author was careful to avoid saying that it does, although personally he believes that the break in the emergence of young bees is an important factor in causing the bees to give up swarming.

Mr. Cole points out that when the queen is taken away, all queen-cells destroyed at the time of taking away the queen, and again 10 days later when a young laying queen is given, the bees give up swarming although the break in the emergence of young bees does not occur until 11 days later; and that if this break in emergence has anything to do with the giving up of swarming the bees would thus react to a condition 11 days before it arrives, which, of course, is not at all probable.

The error Mr. Cole makes here is in assuming that the swarming impulse disappears within 10 days after taking away the queen. While the colony is queenless, of course it can not swarm or at least it usually does not, although such colonies sometimes swarm and return to the hive as if the bees thought they had a queen. After such colonies are made hopelessly queenless by destroying the queen-cells ten days after taking away the queen, the swarming impulse is sometimes still so strong that if a virgin queen or even a young laying queen is given immediately the colony may swarm, leaving the parent colony hopelessly queenless. In comb-honey production when a laying queen is given after a period of ten days of queenlessness, the colony often proceeds to build queen-cells as soon as young larvae from the new queen are present, and under some conditions will swarm within a week after the new queen begins to lay.

In their early experiments to prevent swarming by removing the queen when producing comb honey, Elwood and Hetherington found it necessary to keep the colony queenless at least 18 days, thus making in most cases 21 days before the new queen would begin to lay after being released from the introducing cage. Gradually this time has been shortened as better methods of causing the bees to give up swarming have been worked out, so that it is now possible to get rid of the swarming impulse to a sufficient degree by 10 days of actual queenlessness.

Of course in extracted-honey production the 10-day period is usually sufficient if the management is good, but this is by no means true for all localities in comb-honey production. The influence of a large number of recently emerged young bees in the brood-chamber is well illustrated by the ease with which recently hived swarms can be induced to swarm again within 10 days or two weeks after being hived by shaking the young bees from the parent colony in with the swarm at the time of moving the parent colony to a new location a week after the swarm issued to prevent after-swarming. The Editor has done this in scores of cases in producing comb honey.

The break of about two weeks in brood-rearing, which occurred last year in May in the northern states, resulted in a season of no swarming in those localities where the honey flow closed early in July, though there was swarming later in localities having a later honey flow. This break in brood-rearing was noted editorially in this journal at that time, page 409, with the prediction that there would be no swarming during the usual swarming season in portions of the clover region. In the Editor's apiaries in northern Indiana only one colony out of about 200 colonies started queen-cells during the swarming season, this one being apparently a case of supersedure. The colonies were exceedingly strong and were run for comb honey, the yield being an average of a little over three supers per colony. The break in brood-rearing is apparently the only explanation of the total lack of swarming in this case.

* * *

The Isle of Wight Disease Bill.

THE bill to regulate the importation of honeybees into this country, mentioned in our last issue, was introduced into the House of Representatives on April 21 as House Bill 11396 by Representative Haugen, Chairman of the Committee on Agriculture. It was also introduced in the Senate on April 25 as Senate Bill 3506 by Senator Norris, Chairman of the Agricultural Committee of the Senate. The bill as orginally introduced is as follows:

AN ACT TO REGULATE THE IMPORTATION OF THE HONEYBEE (APIS MELLIFICA).

> Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be unlawful for any person to import or offer for entry into the United States the honeybee (Apis mellifica) except for experimental or scientific purposes by the United States Department of Agriculture upon such conditions and under such regulations as the Secretary of Agriculture and the Secretary of the Treasury shall prescribe. Provided: That the Secretary of Agriculture and the Secretary of the Treasury may make regulations admitting honeybees from countries where no dangerous diseases of honeybees exist.
>
> That any person who shall violate any of the provisions of this act shall be deemed guilty of a misdemeanor and shall, upon conviction thereof, be punished by a fine not exceeding $500 or by imprisonment not exceeding one year, or both such fine and imprisonment, in the discretion of the court.

The hearing on this bill before the House Committee was held on May 4. The committee decided to amend the bill as follows: In place of the proviso, read: ‘‘And provided further, that such adult honeybees may be imported into the United States from countries in which the Secretary of Agriculture shall determine that no diseases dangerous to adult honeybees exist, under rules and regulations prescribed by the Secretary of the Treasury and the Secretary of Agriculture.’’ The committee voted unanimously to report the bill out favorably.

Judging from the letters coming to this office the beekeepers of this country are practically unanimous in favor of the enactment of such a law to protect the industry from a possible invasion of the Isle of Wight disease into this country. Not a single protest has been received direct at this office, and many have written in favor of the bill. The American Bee Journal, however, reports having received some letters opposing the bill.

The opposition apparently arises through a misunderstanding of the provisions of the bill, for we understand that those who are opposing the bill are in favor of preventing importations from those countries where the Isle of Wight disease is known to exist but permitting importation from all other countries. This was the first thought of the committee which suggested the law, for it was the intention from the beginning that Canada should be exempted; but, on investigation of the legal phases involved, it was found necessary to draft the law to exclude bees from all countries, except those which may be exempted by the Secretary of Agriculture and the Secretary of the Treasury. In addition to meeting the requirements of the lawmakers, this plan would permit immediate action to exclude bees from any country from which shipments are permitted under the provision of the bill if the Isle of Wight disease should be found, instead of waiting until Congress could take action to amend the law to exclude bees.

Since the bill clearly specifies that the Secretary of the Treasury and the Secretary of Agriculture may make rules and regulations under which bees may be imported from countries in which no disease of adult bees exists, it is clear that the objections of those who have opposed this bill have all been met. Surely, no one in this country who might wish to import a few queens from some country where the Isle of Wight disease may now exist, would be willing to endanger the whole beekeeping industry in this country simply to secure a few queens of some obscure race. Beekeeping in this country has recently grown into an important industry and deserves any protection of this sort that can be had.

Both Canada and Australia have taken action to prevent the importation of the Isle of Wight disease. In these countries immediate action was possible, because previously enacted quarantine laws gave to the proper officials the power to issue an order prohibiting the importation of animals likely to introduce dangerous diseases. Such an order was issued by the Governor-General of Australia on January 1, 1922, prohibiting the importation of ‘‘bees, used or second-hand hives or hive-goods or products (excepting honey and wax) from the United Kingdom’’ and by the Dominion Minister of Agriculture, Dominion of Canada, effective May 1, 1922, prohibiting the importation into Canada of ‘‘bees, used or second-hand hives, or raw hive goods or products excepting honey or wax from the Continent of Europe.’’ Not having such a law, this country must wait until Congress can act to prevent importation of bees from countries where the Isle of Wight disease may exist.

The exclusion of bees from the mails, coming into the United States, by the order of the Post Office Department, effective March 21, of course stops importation through that channel, but many bees and queens are shipped to this country through channels other than the mails. If this bill becomes a law, if the Isle of Wight disease should be found at any time in a country which has been exempted by the Secretary of Agriculture and the Secretary of the Treasury because the disease has not previously been found there, the embargo can be immediately restored without an act of Congress.

Since some opposition has developed to the bill, which is now in both the Senate and House of Representatives, it is more important than ever that beekeepers who desire the protection afforded by this bill write to their Senators and Representatives asking them to support it. A letter should also be written to Senator Norris, Chairman of the Agricultural Committee of the Senate, Washington, D. C., and to Representative Haugen, Chairman of the Agricultural Committee of the House of Representatives, Washington, D. C., in support of the bill. These letters should be written immediately on receipt of this journal and sent out in the next mail.

CHOOSING A LOCATION

A Timely and Important Subject in Migratory Beekeeping. How to Choose the Apiary Site

By M. C. Richter.

WHERE is the best place to locate? This is the eternal question that is ever in the minds of most beekeepers and prospective beekeepers alike. The question does not resolve itself into the following simple equation:

> Honey Plant Acreage + X Number of Colonies equals X pounds per Colony Surplus.

The foremost problem concerns itself with the honey plants themselves. The question of overstocking a location is not nearly so important.

In our beekeeping practices we are fundamentally dependent on bee behavior. When it comes to the choice of a location, we must have a knowledge of plant behavior, climatic conditions and soils. It must be admitted that our success depends in a very large measure on the proper choice of locations. Our literature is very deficient in this respect. Only recently have we received information on honey plant regions and on the secretion of nectar, and we owe our thanks to Dr. Phillips of Washington who has mapped the clover, buckwheat and tulip tree regions of the East. California must have some wonderful beekeeping regions that as yet await exploration. When such are made known through careful research work, it will prove of inestimable value to the state. At present there is but little information that may be imparted.

Conditions Influencing Nectar Secretion.

There are a few general considerations that are known, such as: A plant growing under suitable environmental conditions shows a tendency towards increased nectar secretion, and also that higher latitudes and altitudes show a like tendency. We know also that there is a tendency towards a greater flow of nectar when cool nights are followed by warm days; but there is another factor that is directly connected with the above, namely, the amount of moisture that the soil contains. However, the moisture should not be excessive, nor should it be too deficient, for excessive moisture tends towards vegetative growth, while a scarcity of moisture means that the flowers will soon fade and the plants then will bend their energies towards the reproductive stage.

On account of our meager knowledge this article can offer but little assistance. It is more the intention here to point out some of the problems that are to be solved and to solicit aid among Gleanings' readers in the collection of data pertaining to nectar secretion. In that way we can make excellent progress and such material will help the investigator.

A Sage Range.

For this purpose we will suppose, for example, that we are looking for a sage location, and we will bear in mind that much the same problems confront the beekeeper in his choice of a location in other plant regions. We make this choice because it is a popular one. Sage honey has a wonderful reputation, commands a topnotch price, and when pure does *not* granulate. For the latter reason it is a table honey par excellence. Dealers and grocers favor both the comb and the clear honey.

Geographical Distribution.

The first step in the study of a honey plant is in mapping its distribution. In the case of black sage, we find that it inhabits the Coast Range Mountains with its northern boundary in the vicinity of Mt. Diablo. From there it extends southward through San Diego County into Mexico. It favors slopes with a south, southwest and west exposure. The plant ranges along the ocean to several thousand feet above the sea level, and favors a soil containing lime. Sage, in its struggle for existence, has settled in the above region. It has not increased its distribution to the north or east because the environmental conditions in these places

Fig. 1.—Unprotected bees that receive the full benefit of sweeping winds not only consume a larger amount of stores, but build up more slowly in the spring.

were not suited to the plant's welfare. In like manner, northern slopes were found unadaptable. Owing to various factors, the distribution of black sage has been confined to the limits outlined above. It has not extended further owing, perhaps, to unfavorable climatic conditions, or to the fact that it was encroaching upon favorable environmental conditions of other plant life, and was consequently choked out. In some parts of the black sage region, the sage has found its optimum habitat—that is, it has found the most favorable condition for its growth and reproduction. Where the plant is found with a most luxuriant growth, and in great abundance, to the exclusion of almost all other plants, it may be said that it has found its optimum habitat. Under these situations, generally speaking, the plant would secrete a greater amount of nectar.

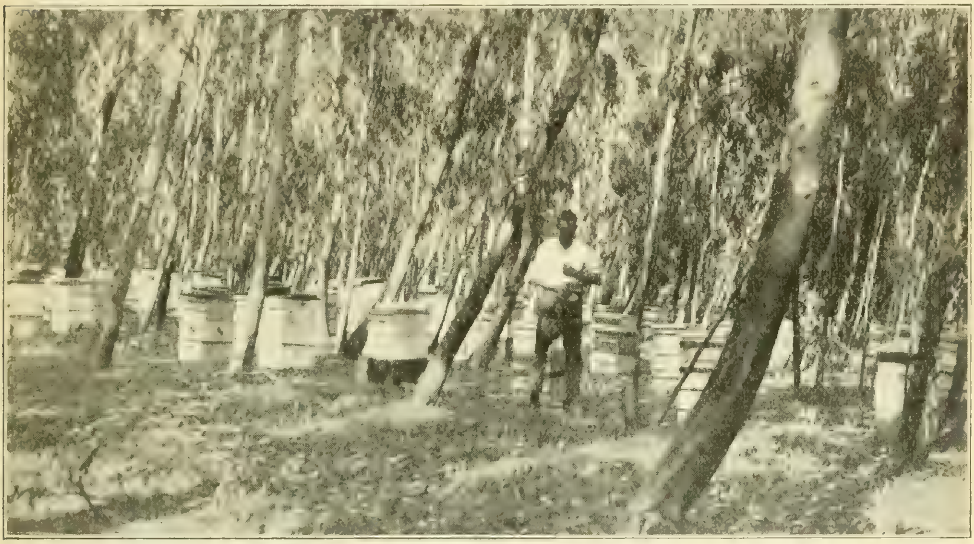


Fig. 2.—Eucalyptus groves make good windbreaks, but afford too much shade during the winter months.

Environmental Conditions.

What are then the environmental conditions best suited to the black sage? They concern themselves with latitude, altitude, character of soil and the moisture content thereof, and various climatic conditions, such as rainfall, temperature, humidity and seasonal variations, to say nothing of the electrical condition of the air. There is a great deal to learn. The secretion of nectar should be measured at various latitudes and altitudes, on different types of soils, on soils varying in the degree of moisture which they contain. Likewise, climatic records, relative to rainfall, maximum and minimum temperatures, humidity of the air, barometric pressure and wind direction, should be made. From the standpoint of beekeeping practices, it would be interesting to know at what hours of the day nectar secretion commences or ceases, for this phenomenon certainly varies with different honey plants.

The relationship that fog bears to nectar secretion is another important matter. In southern California, many beekeepers have felt that fog is a detriment while the sage is in bloom, whereas in central California we know that it has a beneficial influence in that it helps retain the moisture in the soil.

Making Records.

Many of the above observations we can not make. Not only do we not have the facilities but likewise we have not the time. We can, however, put an average colony of bees on a pair of scales and record each evening either the loss or gain in weight during the day. The maximum and minimum temperatures can likewise be recorded without loss of valuable time, and perhaps rainfall data as well. Such observations as the date of the last spring frost, appearance of first sage bloom, commencement of flow, are very valuable and should be made by all beekeepers. Such information not only helps in the selection of a range, but also will tend to improve our beekeeping methods. In time, it is hoped that we will know the proper night temperatures, as indicated by Dr. Phillips in his talks at our short courses, for sage secretion the following day. When this is known, can we not plan our day's work to much better advantage? If after a series of years we have studied our seasonal variations, we shall be in a better position to forecast the time and duration of a honey flow. In migratory beekeeping this will prove very valuable.

Let us study the effects of hard winters followed by either severe, mild, wet or dry springs, or any other combination that may be presented. A close study of plant behavior and the climatic conditions affecting it will help us all immensely in beekeeping practices—it will mean bigger crops.

Minor Honey Sources.

In choosing a sage location we must also have in mind other sources of nectar. An ideal sage location will afford sufficient nectar for "breeding up" and "filling up." A continuity of nectar secretion is desirable during the two months prior to the sage flow, and again during the fall, so that the bees can fill up for winter. A sage location, then, should contain such spring bloom as manzanita, willow, laurel, alder, wild lilac; and, in the fall, wild alfalfa, wild buckwheat, sumac, honeydew and blue curls. Otherwise the bees will be compelled to consume more sage honey or sugar syrup, unless migratory beekeeping has been resorted to. Furthermore, a good range will never lack sufficient pollen-bearing plants during spring, as well as water during all seasons of the year.

Protective Measures.

It is wise in the selection of a bee location to bear in mind the possibility of forest fires, and to ascertain, if possible, where probable firebreaks might be located. It might also be necessary to consider the possible wholesale grazing of sheep on a range, as sheep in dry seasons are very destructive to sage shoots. Another protective range measure is that of not permitting the introduction of a dark-colored honey, such as horehound, from contaminating a sage region. We likewise choose a range from the standpoint of marketing facilities, and outyard and migratory possibilities; and lastly, some of us will pay a little attention as to whether or not any of our neighbors harbor American foul brood.

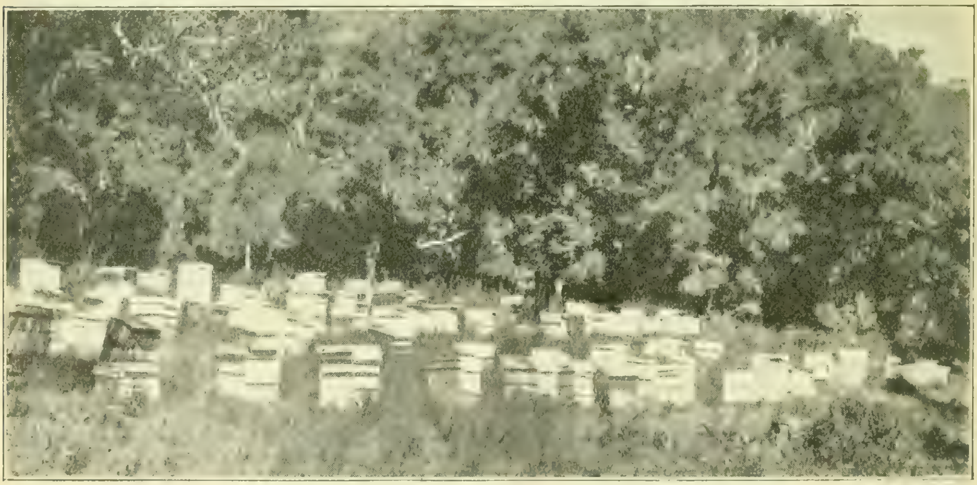


Fig. 3.—The ideal apiary site surrounded by trees except on the south where a flood of sunlight can always enter.

The Apiary Site.

The selection of our apiary site is a matter of convenience and protection against inclemency of the weather. Figures 1, 2 and 3 show different types of apiary sites. The first is out in the open, altogether unprotected, and the writer can vouch with absolute certainty that the bees in this unprotected site needed 15 pounds of honey per colony more than protected bees in order to winter and breed up for a honey flow. This yard, although it needed this extra amount of stores, yielded, over a period of six years, an average colony surplus of 156 pounds in the San Joaquin Valley.

Fig. 2 shows a protected yard in a eucalyptus grove. This type of site affords sufficient protection and would be entirely satisfactory were it not for the dampness under the trees during winter. In Fig. 3 we have an ideal windbreak surrounding the apiary, with the southern exposure open admitting plenty of sunlight. Plenty of sunlight at all times can not be overemphasized. Exceptions to this statement are found only in regions like the Imperial Valley.

Overstocking.

On a good sage range the question of overstocking does not so much concern itself with the sage as it does with the bloom which helps out in the breeding-up and filling-up periods.

Locations are rarely overstocked during main flows, and the question of overstocking concerns itself only with the caring of the bees over winter and preparing them for next season's crops. Nowadays, the tendency is not to have over 150 to 200 colonies in any one apiary, no matter how good the range may be. It is better policy to have five yards of about 100 colonies each, and have them a quarter of a mile apart, than to have all the bees located in one yard.

The reason for this is the demoralizing effect that is almost sure to take place when bees are worked in large yards during poor bee weather. Small yards elevate the morale of the bees and their keeper and, with the home extracting plant, actually cut down the cost of production.

Big Sur, Calif.

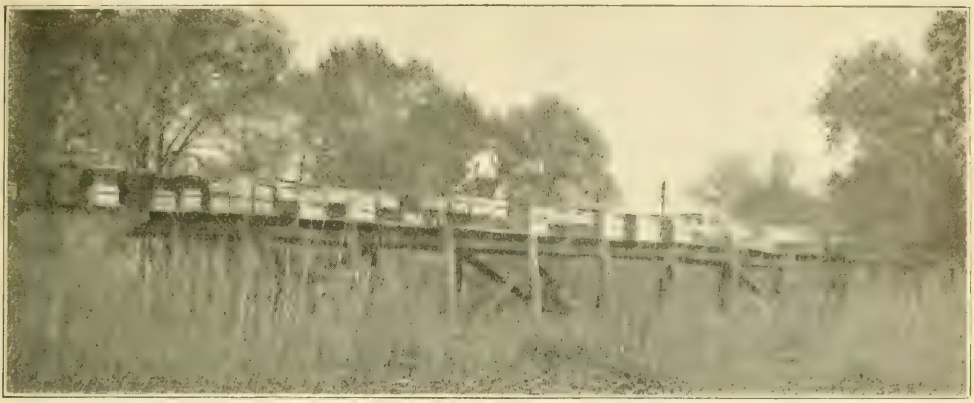


Fig. 4.—In the low lands along the river in the great valleys bees must be elevated, owing to the overflow along the bottom during winter and in May and June when the snows melt in the Sierras.

THE CAUSE OF SWARMING

Has This Elusive Thing Been Discovered at Last After Fifty Years of Searching?

By Geo. S. Demuth

Ever since beekeepers quit looking upon swarming as desirable in adding to the number of colonies for the brimstone pit in the fall, they have been struggling with the problem of swarm control, which in some localities is still one of the most difficult problems in honey production. Instead of the old-time thrill of pleasure at the announcement that the bees are swarming, the progressive beekeeper of today hears such an announcement with disgust. It is interesting to note that some of the terms he uses in connection with swarming indicate that he looks upon swarming as an abnormal thing. He speaks of the "swarming fever" and talks about treatment for swarming colonies as though swarming were a disease.

In the fight against swarming, naturally one of the first questions is that of its cause. The back volumes of bee journals are replete with suggested causes of swarming. Thousands of pages have been filled with plans for the prevention of swarming, each plan based largely upon some theory as to the cause of swarming.

Swarming Instinct Sometimes Dormant Through Season.

Since swarming is the natural method of reproduction of colonies, upon which the existence of the species depends in nature, beekeepers are willing to accept this deeply seated reproductive instinct as the fundamental cause of swarming, but they want to know just what it is that calls forth this instinct at certain times and why it is apparently dormant at other times. They know that some colonies go through the season piling up a large surplus of honey, apparently without a thought of swarming; while other colonies in the same apiary waste their energy in swarming; that some seasons practically all colonies go through the season without attempting to swarm, while in other seasons a majority of the colonies try to swarm; and that in some localities, as in some parts of the tropics, well-managed colonies seldom swarm, while in other localities, especially in the far north, swarming is troublesome nearly every year. No wonder that beekeepers have been searching for the thing that throws the switch which leads some colonies headlong into swarming while others continue on the main track of gathering and storing.

Many Things Have Been Put Forth as Cause.

In the search for the thing that throws the switch, some have looked upon swarming as a taint in the blood that might be bred out, and at one time American beekeepers made serious efforts to eliminate swarming by breeding. Some even claimed to have actually accomplished this, but today no one really hopes that a swarm-proof strain of bees will ever be developed. Swarming has, of course, been reduced by the elimination of stock that shows a great tendency to swarm when there is but little if any excuse for it.

Lack of sufficient room is generally recognized as contributing to the tendency to swarm. As a rule, colonies in large hives swarm less than colonies in small hives. Formerly much was said about colonies of bees established in attics never swarming, because such colonies had the whole attic for a hive. But swarms do issue from colonies housed in attics and other large cavities, and have been known to issue from colonies established under the eaves of buildings, having the whole out-of-doors for a hive. Swarms sometimes issue from the largest of hives, even when tiered up five or six stories high. I have seen swarms issue from two-story hives having 20 combs in which only four or five frames contained brood, the rest of the combs being practically empty and not occupied by the little colony. While large hives and an abundance of room in the form of good empty comb greatly reduce swarming, they do not prevent it in all localities every season.

It has been said that bees swarm because of the honey flow, which makes them feel sufficiently prosperous to divide the colony and build a new home. In the North swarming does usually come during the early honey flow; but in some localities, especially in the South, swarming occurs before the main honey flow, swarms sometimes issuing when the colonies are gathering scarcely enough for a living. In some places swarming ceases entirely on the arrival of the honey flow. While the honey flow often influences swarming, it can not be considered the cause of swarming.

Some thought that the presence of drones causes swarming. Working on this theory Aspinwall, many years ago, constructed wooden combs by drilling holes into the ends of blocks of wood to form the cells in order to have all cells of worker size to prevent the rearing of drones. After years of research along this line he abandoned this theory of the cause of swarming and took up another theory to be mentioned later, which finally resulted in the invention of a non-swarming hive. In this hive instead of eliminating the drones he provided wide spaces between the combs, inserting in these spaces slatted dividers to prevent comb-building in the wide spaces.

Old queens have been put forth as the cause of swarming. Some said that the old queen becomes broody in her second year. Others said that a queen, after laying so many eggs in the spurt of spring brood-rearing, becomes tired and seeks a rest by swarming.

At one time it was believed by many that a queen does not swarm during the first season of her life, and several beekeepers in the North tried to prevent swarming by requeening their colonies in the spring with young queens from the South—only to find that many colonies so treated swarmed, though, of course, they no doubt had less swarming because of the young queens.

Much of the trouble from swarming in colonies having old queens, is no doubt from supersedure during the swarming season when colonies often apparently depart from the original plan of supersedure and swarm because queen-cells are present. In many respects such swarming is quite different from normal swarming.

Influence of Age of Queen Upon Swarming.

Gravenhorst laid down the rule that a colony having a laying queen reared this season will not swarm this season, provided the queen was reared in this colony. If she was reared elsewhere, the colony may swarm this season. But we know that if the old queen is removed at swarming time and all queen-cells (if any) are destroyed, then all queen-cells again destroyed ten days later, a young laying queen from another colony may be given a few days later with the same safety from further swarming as if the young queen had been reared in this colony. The important thing to note here is that when a young queen is reared in this colony this year, there is (except in some cases of supersedure) an interval of at least 16 days during which no eggs are laid. When a similar break in brood-rearing is brought about by removing the queen, it does not make any difference whether the young queen is reared in this colony or elsewhere, so far as swarming is concerned. Even when the old queen is given back to the colony after 16 days, there is usually no further swarming. Apparently the condition of the colony brought about by the period of queenlessness has more to do with the prevention of swarming than the age of the queen.

How Young Bees Contribute to Swarming.

Gerstung, a German investigator, put forth the theory that swarming is brought on by a preponderance of young bees. This fits in well with the well-known fact that the swarming tendency is strongest early in the season when young bees are emerging in greatest numbers. This theory would also explain why colonies are willing to give up swarming when their brood is taken away as in artificial swarming, as well as why the swarming impulse disappears completely about 20 days after removing the queen when the dequeening plan is used to prevent swarming. Using this theory as a basis, comb-honey producers about 20 years ago worked out plans by which the brood and youngest bees were taken from the colony at swarming time, kept in a separate hive until old enough to do field work and then returned to the main colony. Producers of extracted honey, instead of putting the brood and young bees into a separate hive, placed the chamber containing the brood above the queen-excluder, the queen being confined below, thus separating the young and emerging bees from the colony below. In 1908 E. E. Coveyou advised placing the chamber of emerging bees above the supers to separate them still further from the colony. (See Gleanings, 1908, pages 640-641.) This was further emphasized by A. C. Allen in 1910 (A. B. J., 1910, page 94) and by Chalon Fowls in 1915 (Gleanings, 1915, page 574).

The Aspinwall non-swarming hive was based upon the young-bee theory as the cause of swarming. It provided extra room for these young bees between the combs.

Gerstung, however, carried his theory so far as to attempt to explain swarming as caused by an excess of nurse bees in proportion to the number of larvae to be fed, the unused larval food causing a physiological condition in the nurse bees bringing on the swarming impulse. He evidently quite forgot that when an artificial swarm is made by shaking there are no larvae to feed during the first three days; yet the bees are willing to give up swarming if properly handled, even though these same nurse bees are shaken with the older bees and there should be a much greater excess of larval food than before shaking.

How Field Bees Contribute to Swarming.

In 1916 I had several normal prime swarms from colonies that were made up entirely of bees old enough to work in the fields. This, of course, was unusual. Instead of there being an excess of larval food in these cases there should have been a deficiency, for old bees are supposed to elaborate larval food with difficulty. While a large proportion of young bees, no doubt, contribute to bringing on swarming, they alone evidently are not always the cause.

During the honey flow from clover in 1916 the plants apparently did not begin to yield nectar during the forenoons, since the bees did not go to the fields until about 11 o'clock. During these hot forenoons the field bees remained in the hives, crowded into the space below the frames and pushing upward among the combs, apparently waiting for the signal to rush to the fields. But few, if any, field bees could be found in the supers during the forenoons, but the brood-chambers, especially the lower portion, were literally jammed with these old workers. Just previous to the honey flow the field bees had been confined to their hives by several weeks of almost continuous rain, and when the honey flow finally came they staid at home during the sultry forenoons waiting for the nectar to come. The season was the worst for swarming I have ever seen.

Since that time I have carefully gone over the back volumes of the bee journals for reports of seasons of excessive swarming; and thus far I find that, in every case, excessive swarming was attended by some factor which caused the field bees to stay in the hives during the heat of the day, such as rain or the flowers yielding only a part of the day.

While a large proportion of bees too young for field work is apparently conducive to swarming, if to these is added the great horde of field bees all trying to stay within the already crowded brood-chamber, the congestion and discomfort are too much for even the best-bred bees, which at such times often forget their manners and swarm most unreasonably.

One Factor Always Present in Swarming.

Is it not now time to announce that the cause of swarming has at last been discovered? Fifty years of accumulated experience of beekeepers waging a bitter fight against swarming indicates that one thing is always present in normal swarming, so far as the prime swarm is concerned, whether the hive is large or small, whether the colony is weak or strong, whether the queen is two years old or two weeks old. This one thing that is always present is a congestion of bees within the brood-nest, bringing to the colony a feeling of strength or a need for expansion.

If this congestion is brought about in weak and medium colonies by the colony's confining its work to the brood-chamber, leaving the supers and remote brood-combs vacant and crowding the queen by surrounding the brood-nest with honey, the congestion within this little brood-nest is as real and as potent in bringing on the swarming impulse as though the colony were 20 times as strong. The remedy is stronger colonies or a strain of bees less inclined to crowd the queen in this manner. If the congestion and discomfort are brought about by a lack of ventilation or shade, the remedy is obvious. If the congestion is brought about by a preponderance of young bees which are inclined to stay in the brood-nest too long, the remedy is to invite these youngsters upstairs by giving a set of attractive empty combs immediately above the brood-combs. If the congestion is brought about by field bees staying at home as they often do, even when nectar is plentiful, because the hive is already crowded and uncomfortable, the remedy is to invite more bees upstairs and give more ventilation if needed. How foolish for field bees to stay at home because the hive is not comfortable, when by doing so they only add to the discomfort!

Congestion of the brood-nest is a matter of distribution of the bees rather than numbers, for the hive can be expanded to accommodate all; but the bees must be induced to expand also as the hive is expanded. If most of the bees can be induced to leave the brood-nest, going either into the supers or to the fields, all is well. If the congestion in the brood-nest is caused by field bees staying at home during the heat of the day waiting for the flowers to begin to yield, the problem becomes more difficult; but here again anything that adds to the comfort of the colony should help. Anyway, it is some comfort to know the cause of swarming even though we have not yet learned how to remove it in every case.

SURPRISES IN EXTRACTING

Speed, Time and Temperature Determine the Amount of Honey Left in the Combs

By H. H. Root

When attempting to get accurate figures in regard to the extracting of honey, it is impossible to deny that locality has an important bearing. Figures that represent an average of conditions in one locality many not be accurate for another locality where the honey may be different in density and where other conditions may be greatly changed. Extracted-honey producers can well afford to give some earnest attention to some of the problems of efficiency in extracting. The figures that I present here I hope will serve to bring this matter to the attention of the producers, and will, perhaps, be a surprise to many.

From our Krause apiary of 65 colonies we brought in 157 supers of honey. The combs, most of them, had been recently drawn from full sheets of foundation; therefore, the frames were spaced close. We secured a total of 6,748 pounds of honey, about 43 pounds to the super, or 4.3 pounds to the comb. Next year we shall put in only eight combs in a ten-frame super, so the extractor will take a full super at a load. Our average per colony was about 103 pounds, which was close to the average of our other honey-producing yards. Besides this we saved two full combs per colony for feeding this spring. It must be remembered that Medina County is not a particularly good location for honey. Next year, however, we hope to increase the per colony yield as we shall not need to have so many combs built.

Percentage of Honey in Cappings.

Of the 6748 pounds of honey from this one yard, 5572 pounds came from the extractor, and 1176 pounds from the capping-melter. Therefore, 17.4 per cent of the total amount came from the cappings. Had we spaced wide, this percentage would have been much higher. We got 74 pounds of wax from the cappings; therefore, 1.08 per cent of the total weight of honey and cappings was wax; or, 5.92 per cent of the weight of honey and wax cut off the combs was wax.

In a former article I referred to the fact that E. F. Atwater of Meridian, Idaho, had discovered that even after draining the cappings thoroughly 4 per cent of his original entire crop was left in such cappings. This is a startling percentage, but it must be remembered that the western honey is very thick and that it drains very slowly from cappings. However, be that as it may, Mr. Atwater's figures, based not on a small lot but on an entire crop, convince me that cappings drained until they appear to be nearly dry are, as a matter of fact, very far from being dry.

Efficiency in Extracting.

For the sake of getting accurate statistics on the amount of honey left in the combs after extracting we sacrificed a number of supers of good combs, melting them up after extracting, separating the honey thus secured from the melted combs and carefully comparing the weight of such honey with the weight of the honey originally in the combs. In this way we have obtained some very interesting figures.

Test No. 1.

The first experiment we made was at a temperature of 75 degrees. The eight combs that we selected, including the frames, weighed 50¾ pounds. After uncapping, they weighed 37¾ pounds. After three minutes in the Buckeye extractor, including the time of speeding up and with the extractor turning at 300 revolutions per minute, the eight frames of extracting combs weighed 7¼ pounds. The frames empty, after cutting out the combs, weighed 4 pounds. The cappings and honey cut from the eight combs weighed 13 pounds. The honey in these cappings weighed 12.33 pounds. Therefore the wax in the cappings weighed .77 pounds. The empty combs after extracting and after being cut out of the frames weighed 3.25 pounds. After melting up and separating the honey and wax we had 1.375 pounds of honey and 1.88 pounds of wax.

From the above figures it will be seen that we extracted 30.5 pounds of honey. In the cappings there were 12.33 pounds. After melting up the combs we had 1.375 pounds of honey left. Therefore the total weight of the honey in the eight combs originally was 44.105; 1.375, the weight of the honey left in the combs after extracting, is therefore 3.1 per cent of the total honey originally in the eight combs.

Test No. 2.

This test was made with combs left in a hot room long enough for the honey to reach a temperature of 100 degrees. The extractor speed was 350 revolutions per minute, and the time in the extractor, including the speeding up, was 2½ minutes.

Keeping careful account of all the weights as mentioned in the first experiment, we found that 3½ per cent of the total honey was left in the combs. The increase in temperature to 100 degrees did not, therefore, have quite the effect that we supposed it would. This experiment also shows, if one may judge from one set of combs, that 2½ minutes at 350 revolutions per minute is not quite equal to three full minutes at 300 revolutions per minute. To be on the safe side in our subsequent work throughout the season, we used a speed of 350 revolutions per minute and the time of three minutes.

At a speed of only 250 revolutions per

minute we consider it impossible to extract thick honey, at a temperature of 75 or 80 degrees, in less than four minutes in the extractor, and 5 and even 6 minutes at so low a speed is better. There is no question in my mind but that a speed of 350 revolutions per minute is safe so far as comb breakage is concerned, provided one uses ordinary care in handling the extractor, and that this speed is a great timesaver in the long run. Even at this high speed we do not break new combs, but we usually reverse twice while the reel is speeding up, so that most of the honey is out by the time it reaches full speed. Ordinarily, we reverse only once more, making three reversings in all. For the last reversing we usually use the brake slightly first, although in case of old combs I do not consider this necessary.

How to Tell when Most of the Honey is Out of the Combs.

Our experience has shown that it is not safe to assume that combs are dry just because they look dry. If the angle of the bases of the cells when viewed in a good light appear sharp and distinct, it is reasonably safe to assume that there is not much more than 3 per cent of honey left in the combs. If there is enough honey left in the cells to obscure the base angles so that the bottom of the cell appears round in a good light, it is my belief that 10 to 15 and perhaps 20 per cent of the available honey is left in the combs. It is more difficult to judge the amount of honey left in old combs, because it is harder to see the bottoms of the cells and because the cocoons obscure the angles. A good speed and at least three minutes in a full-speed reversing extractor at 75° to 80° need not leave over 3 per cent of honey in the combs even if the honey is thick. If the honey is thin I am confident that the amount is somewhat less, although our experience with the honey at 100 degrees shows that it is unsafe to take anything for granted.

While it is an exceedingly difficult matter to prove, it is certainly a fallacy to assume that none of the honey left in the cells is wasted. It is true that the bees put new honey on top of honey not entirely extracted, but it is also true that in many instances wet combs put back on the hives excite the bees and cause "gorging." In my opinion, at least one-half of the honey left in the combs is wasted. At the end of the season especially, it is very desirable to have the combs as dry as possible to avoid the nuisance of having the bees clean them out.

I feel that this is a subject we know too little about today, and one that every beekeeper should make a special study of during the coming season. If I am wrong, someone should set me right; there are good beekeepers who take the opposite view, but let us have facts and not fancies.

FIFTY YEARS' EXPERIENCE

What It Has Taught About the Control of Swarming in Comb-Honey Production

By J. E. Crane

It is of the control of the swarming impulse of which I wish to write rather than the prevention of swarming, and especially in the production of comb honey. It is a comparatively simple matter in producing extracted honey to control swarming, but when we come to comb honey it is quite another story.

The problem can be briefly stated in this way. Here is a yard of 50 or 100 colonies. How can they be kept at work to the best advantage during the honey flow?

I write, supposing we are to visit the yard only once in eight or nine days as we do in the case of our own outyards. Perhaps I can not do better than to invite the reader to go with me as we work; you can look on and receive instruction while I work.

When to Remove all the Brood.

We open the first hive we come to. It is strong and has a vigorous queen reared last year. We notice it is holding up work in supers and on examination find it has queen-cells with larvae three or four days old. There is no mistaking the bees' intentions. We will at once remove their brood-combs, giving dry combs or combs that have some honey in them. If we are short of combs we give two combs and fill out with frames of foundation. If we were to shake them on to all foundation, they might desert the hive in disgust. Now we replace the supers and close up, and go to the next hive. The colony we have treated we expect will give us as much or more section honey, and have the brood-chamber better filled than it would if it had made no preparation for swarming.

What to Do With Removed Brood.

In the next hive we open we find conditions quite different. It is making no preparation for swarming; in fact, we find three combs in the brood-chamber without brood, although it is starting in the supers. We will remove these three broodless combs containing a good deal of honey, and give this colony three good combs of maturing brood in place of its combs of honey. This will build it up so we may expect a good surplus from it.

The next hive we open is a nucleus we started earlier in the season with a choice queen, removed from a strong colony from which we desired to rear some queen-cells. We will just give it two nice combs of brood that we took from the first hive we opened. We will soon have it strong enough to go into supers.

Another hive is opened. It is doing well; no queen-cells have been started. It is working well in supers. We can do nothing for it but close it up.

Treatment When Queen is Removed.

The next hive we find is one from which the queen was removed eight days ago for rearing queens. All nice queen-cells must be cut out and placed in a nursery and the rest destroyed to prevent swarming. I know many writers say cut out all but one, but I have found that one may lead out a swarm if left. Better leave them queenless for a week longer in the swarming season.

Disposition of Combs of Honey Removed.

The next hive we find like the first one we opened, preparing to swarm, with an abundance of brood, a vigorous queen, young and active. We will remove its brood-combs and give it the combs of honey we have taken from other hives. If there is not enough to fill the brood-chamber, we may insert two or three dry combs or frames of foundation. It does not harm to shake a colony on to combs half or three-fourths full of honey, for, finding little room to store the honey they gather from day to day in the brood-chamber, they will carry it to the supers above and fill them more rapidly.

Treatment When Queen Is Old.

We open another hive. Here we find queen-cells in all stages of development, some with eggs, some larvae, and one or two already sealed. Shall we shake it as we did the last one? I think not. Look! There is a very small amount of brood for so strong a colony. Evidently the queen is failing. Looking at our record we find she is two years old. No; it will be unwise to treat this colony as we did the last. If we should shake it as we did the last one, they might desert the combs we give it, lose their queen and return to the hive queenless and broodless. Or the queen might fill a space as large as the palm of my hand with eggs and then disappear.

We find colonies having old queens much more inclined to swarm than those having young queens or those not over a year old. It is also much more difficult to check their swarming impulse. If we should shake this colony, it may become an unprofitable one; so we will remove the old queen and also all combs from the brood-chamber which contain little or no brood and fill up with good combs of maturing brood taken from a colony we have shaken. The emerging brood will keep this colony strong and at work in supers, although it is queenless. Of course we must cut out all queen-cells likely to mature before we open the hive again, or a young queen may emerge and lead out a swarm and our plans be thwarted.

Strengthening Colonies After Shaking.

We open another hive. This is one, I see, that we shook or whose brood we removed eight days ago. They are doing well. The queen has filled four combs with brood. Work has gone right on in the supers. They have given up all thought of swarming. All new swarms decrease in numbers rapidly, especially if honey comes in slowly, as no young brood is emerging for the first three weeks.

To make up for the loss of these old bees that are dying off, we will remove three or four combs of honey from the brood-chamber of this colony that was shaken from its brood eight days ago and fill up with combs of emerging brood we have removed from some other hive.

As we go over a yard in this way we look after supers, removing those that are filled and giving new ones where they are needed. A good man can go over a yard of 80 to 100 hives in a day if he has a good assistant. At the end of the day he will have few more colonies than at the beginning, but the most of them will be in better condition to gather the nectar flowing from the fields of clover. All colonies made queenless should be given a young queen in about 15 or 16 days. We run in virgin queens at the entrance, with little loss as a rule. Of course all filled supers should be removed and new ones given as needed.

Some years when we have found it necessary to shake a large number of colonies and we have more brood-combs than we can give to other colonies, we have taken a brood-chamber full of them and gone to some colony where the bees were loafing on the outside of the hive and scooped up enough to care for the brood.

Effect of Destroying Queen-cells.

Sometimes we can break up the swarming impulse by simply cutting out queen-cells once in eight or nine days and it answers every purpose; at least a colony will go no farther than to start cells and the queen lay eggs in them. However, for the majority of colonies, when once they have started, strong measures are required to stop them and keep them at work in the supers. Many colonies will do but little in supers after they have larvae in queen-cells, unless honey is very abundant in the fields, and prompt work is required to secure the best results. It does not pay, as a rule, to shake a colony until it is strong in bees, so we often in the fore part of the season cut out queen-cells from weak colonies and wait until the next time we go over them before shaking.

Of course, such a system requires that the queens' wings be clipped before the swarming season sets in. It also requires good judgment on the part of the beemaster.

Sometimes we can check the swarming impulse by removing only two or three combs or frames of brood instead of removing all of the brood (which is better) and replace with dry combs or foundation.

Middlebury, Vermont.

FROM THE FIELD OF EXPERIENCE

ABSOLUTE SWARM PREVENTION

A Modification of the Demaree Plan Prevents All Swarming and Stimulates Gathering and Storing

The Demaree plan fails, all too often, in its purpose of securing perfect swarm prevention and the largest crop, because the old queen, confined below the excluder, "sulks" and does not lay freely, the colony sometimes even starting queen-cells below and soon swarming, or, it may swarm when virgin queens emerge in the brood placed above the excluder, if the queen-cells are not destroyed. If the queen does not lay freely in her new brood-nest, the number of workers for a later honey flow will fall far below the horde which is necessary to gather a heavy crop. However, where young laying queens in nuclei, on standard frames, are at hand when the flow arrives, far better and more uniform results may be had; and that plan, to cause more dollars to prosper you and yours, is here described.

Preparing for this plan I use a method of securing considerable numbers of fine queens under the natural swarming impulse, during an early flow such as that from fruit bloom.

Other plans of securing young queens may, of course, be used; and when numbers of young layers can be at work in nuclei before the main flow, it is possible to combat swarming far more effectually, where, as here, the orthodox methods do fail too frequently.

Assuming a number of nuclei, each containing one or two combs of brood and bees, with a young laying queen, remove from its stand a strong colony which may or may not be preparing to swarm. In its place put a hive, in the middle of which place a nucleus consisting of one or two frames with some brood and bees, a young laying queen, an empty comb of best quality on at least one side of the little colony, in which the young queen can continue laying, and fill the remaining space with best combs or full sheets of foundation in wired frames.

I usually put an empty comb on each outer side of the hive and then fill the remainder of the space with frames of foundation; the space should be filled in whatever manner is found by experience to give best results under the conditions in other localities.

Now place an excluder on the brood-chamber containing the little nucleus colony. Find and kill the old queen in the colony which you are treating; or, if she is of value, take her out and put her in a nucleus. If in a locality where nights at this time are warm, place one or more supers of empty or partly empty combs just above the excluder, then destroy all queen-cells on the brood and place it in a hive-body or bodies, above the supers of empty comb. If in a locality where nights are cool, place the brood just above the excluder, and the supers of comb above the brood, and save yourself occasional heavy losses of unsealed brood due to the bees partially deserting the old brood-nest, so far from the new queen below, and allowing the brood to chill or suffer from neglect during cool nights or a few days of very cool weather.

In some localities or in some seasons such colonies will not swarm even though young queens emerge above the excluder. Where such is not the case all queen-cells must be destroyed about 10 days later when swarming is over for the season, so far as that colony is concerned. I do not remember that I have ever had a swarm from colonies so treated, so long as they have had room in which to store. The colony by this manipulation is at once placed in the best of condition to gather the crop; and, by the absence of loafing and the free laying of the young queen, there is sure to be a big force of workers to gather a later honey flow.

Briefly, instead of putting a comb of brood, with the old queen, below the excluder, as in the usual Demaree plan and in the various modifications of that plan usually suggested, we put below the excluder a nucleus with a young laying queen, and after removing the old queen from the old brood-chamber, we place this old brood-chamber, either immediately above the excluder, if in a locality having cool nights, or if in a warmer locality, we place above the excluder one or more extracting-supers filled with empty combs, with the brood-chamber with its bees and brood above these empty combs, always first destroying any queen-cells to be found in this old brood-chamber. Later, if increase is desired, this chamber of brood, with its emerging bees, may be set off on a new stand and given a queen. You will not regret giving this improved Demaree plan a thorough trial, for it "delivers the goods." E. F. Atwater.

Meridian, Idaho.

* * *

CATALEPTIC QUEENS

How Despondent Queens Commit Suicide(?) Some New Light on an Old Subject

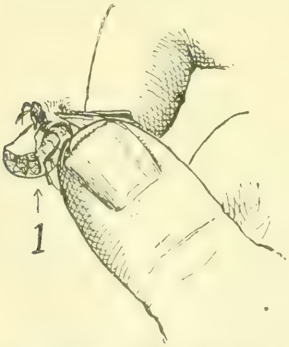
For many years past there have appeared from time to time articles concerning "Cataleptic" queens. They have been described as fainting, having fits, paralysis, epilepsy, catalepsy, heart failure, etc. About 20 years ago I had a queen that threw one of these fits. She lay as though dead for half an

FROM THE FIELD OF EXPERIENCE

hour or more, at which time she came slowly out of it. I placed a drop of honey on her tongue and she revived rapidly, and when placed back in her hive she seemed no worse off for having her ''spell.'' Since that time I have noted many cases similar. Sometimes they recover and sometimes they quiver a short time and die without regaining consciousness. In shipping queens this happened frequently, so that in the course of the season the loss was considerable. This caused me to study the case to see if the cause could be found and a remedy applied. If it were appendicitis, we could operate; if it were something like smallpox, we could vaccinate; or, if it were failing glands, we might graft in monkey glands. Now maybe she ran out of vitamines or by mistake took vitamine ''A'' when she should have taken vitamine ''B.'' But if it were hardening of the arteries causing high blood pressure, why, nothin' doin'; she would have to die. But before we could administer, we must first diagnose (that word always sounds classy).

I have always been a wee bit skeptical about a queen's having catalepsy, from the fact that queens in their hives sometimes get so scared that they squeal and make a terrible fuss as though they were ''plum skeert to death,'' but under such conditions they never throw fits. A very significant fact was that they always had these fits just after being picked up by the wings. All report this fact.

One day I was watching a queen that had gone into the wrong hive. The bees, as is their custom, were trying to catch her by the legs, and she was scratching gravel at a great rate. By and by they got her, and in a moment she seemed to take a fit. When I examined her, I found a small part of a worker's sting left in her body. By her actions, I was convinced that these queens that had fits were getting stung in some mysterious manner. I kept a careful watch and some time later I was rewarded by seeing just how the thing was done. As I picked up a queen by the wings, she put out one of her front feet and placed it on the tip of her abdomen, exactly as shown in the cut. The sting was protruding slightly and her foot was over the end of it. Instantly she quivered and lay as though dead. She had stung herself in the foot! The cut was taken from Mell Pritchard's' book, ''Modern Queen Rearing,'' and was made to show the manner of picking up a queen in order to clip her, and was not made to illustrate this article. Evidently the artist who drew this picture had seen many queens picked up in this manner, for the picture is exceedingly true to life. The queen in the picture does not seem to realize that she is playing with fire and does not know ''it is loaded.''



Queen with her foot against sting.

At other times the queen will curl up in such a manner as to place her sting against her bosom about between the fourth and fifth ribs, or at least where they would be if she had them, and in this position the point of her sting protrudes slightly. The mere touch of the sting is sufficient to make the queen deathly sick, and sometimes she gets an overdose and dies. Since that discovery, I have been particular to keep her ''biznez end pinted tother way,'' and have had no more cataleptic queens. Therefore, as far as queens' having catalepsy, why, ''they haint no sich animul.''

In the April number of the American Bee Journal, Allen Latham writes that catalepsy occurs when the queen has nothing to cling to and that it occurs after she has taken hold of the tip of her abdomen. He also states that the queen acts as though she had been stung by a virgin. So she does, but she accidently stings herself.

Vincennes, Ind. Jay Smith.

SWARM CONTROL

A Veteran Comb Honey Producer Tells How to Do This in the West

Is writing upon this subject any different from a retold story? Yes. When we look back over the past 40 years we see that much has been accomplished in the control of swarming; and while the wreckage of wrong ideas and exploded theories has not been a little, we know we have not yet reached the haven of complete success.

While I believe that we have strains of bees today in which the swarming impulse is much less than 40 years ago, I do not think the time will ever come when the swarming impulse will be eliminated through selection and breeding.

For 25 years I have had both eight and ten frame apiaries, and I do not find the difference in swarming that some report. I am afraid I get the most comb honey from the eight-frame hives. In working for comb honey it is not the kind of hive one uses that controls swarming; it's the kind of honey flow and the way the bees are manipulated to satisfy them.

In this article I can lay down rules only for my own location, for swarming in some locations is much more easily controlled than in others. In all apiaries there is a small per cent of colonies that seem to get in condition to swarm early in the season. Such colonies are allowed to increase, and these splendid natural cells are used for increase or in replacing superannuated queens. This leaves the average-sized colonies to be held until the honey flow without swarming.

It is not necessary here to discuss the different plans of swarm control where one is working for extracted honey, for giving ample room, with a little comb-building to do at all times more than the present needs of the colony up to the honey flow, will do the business. But with comb honey it is different. The beekeeper must have a mental picture of all conditions, must meet the conditions and demands of the brood-nest and not allow that unbalanced condition between the hive bees and the field workers which will soon produce the swarming fever. This can be done by giving the queen ample room, with some combs to draw out, between the supers and the entrance. This will prevent that condition of satisfaction and completeness which bees desire before they swarm.

Now if one feels sure of the approach of his main honey flow, he must reduce his brood-nest to one story and give ample room for surplus-honey storage. Then if the flow comes, swarming will be reduced to the minimum, for there is no condition that prevents swarming more than a good honey flow if it comes just at the climax of the swarming fever. M. A. Gill.

Hyrum, Utah.

COMB LOVERS AND FIRE WORSHIPPERS

Effective Work Done in Conquering Foul Brood in Wisconsin

Yes, we have foul brood—both kinds—and plenty of it. During the last season I inspected bees in nearly every county in the state, and I found European foul brood in almost every yard visited. This disease is no respecter of soils, as many people seem to think. It seems to be equally destructive in the southern part of the state on the rich limestone soil as in the central sandy counties.

Picture No. 1 shows a yard in western Wisconsin almost 100 per cent destroyed by European foul brood. One of the worst areas in the state last year was part of Brown and Kewanee counties. Many of the infected apiaries were on the limestone ridge extending thru Door, Kewanee, Brown and Calumet counties. In Oconto County the disease was practically universal. There was a decided epidemic in Bayfield County in the extreme northern part of the state.

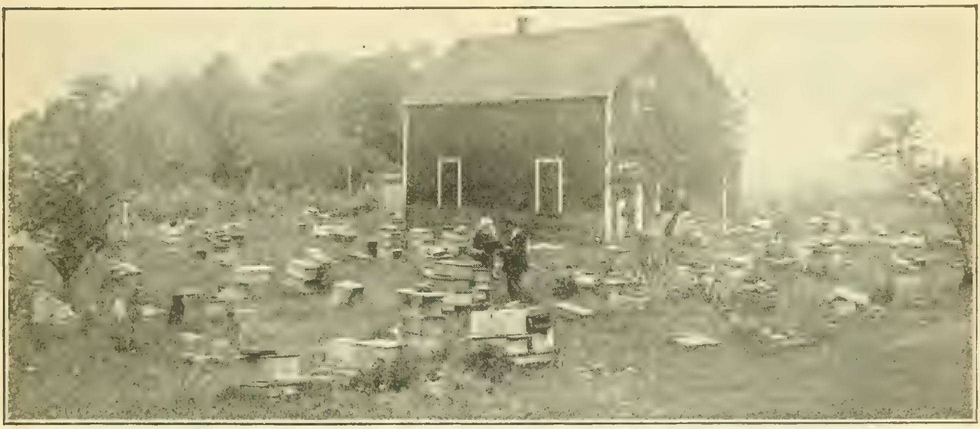


Fig. 1.—A Wisconsin apiary that was almost completely destroyed by European foul brood.

In every case where the disease caused any trouble and loss, two things were evident, hybrid bees and poor beekeeping. So far as I am able to determine, these are the only two factors to be considered in a discussion of this disease. I believe that European foul brood will eventually destroy all of the black and hybrid bees and put all of the poor beekeepers on the shelf.

Because of the large number of wide-awake, aggressive beekeepers in Wisconsin, we are not much concerned about European foul brood. The presence of the disease is the direct cause of much Italianizing that would not have taken place otherwise. In a sense European foul brood is a blessing. It makes an ordinary beekeeper into a good beekeeper or puts him out of the

business. It also discourages the keeping of a colony or so on every farm by careless, inefficient people, which might otherwise become a source of trouble from American foul brood.

American foul brood is being controlled in this state in a very thoro and efficient manner. Our drastic law. which controls the movement of all bees, is working wonderfully to stop the spread of the disease. The inspection force is doing more in the way of destroying infected material than was ever done before. We are practically unanimous in our conviction that the ordinary treatment in the hands of the ordinary beekeeper is a failure. We have not a single case on record where a beekeeper, even the best of them, has been able to eradicate American foul brood from his yard by the ''shaking method.'' I know of many, many cases, among them wise beekeepers, progressive beekeepers, teachers and professors, who have been treating American foul brood in their yards for several years, and not a single one of them has been able to free his yard from the dread disease.

The average beekeeper is a ''lover.'' He loves nature, he loves learning, he loves his bees, but the things he loves the most are the old hives, the old combs and the old paraphernalia which he has made with his own hands. Oh, if we could break up this ''love affair'' and turn these ''comb lovers'' into ''fire worshipers!'' If we could only get them to realize that one ''fire'' is better than a dozen ''shakings;'' that in the long run burning is easier, cheaper and surer than shaking. I have found no one able to keep infected material away from his bees. There are no ''bee tight'' honey-houses. To keep infected material about the place and to keep it away from the bees appears to be an impossibility. I know of no beekeeper who has performed that feat.

Picture No. 2 is a cosy little yard which was found to be about 75 per cent infected with American foul brood. The disease here can be traced. through the movement of bees from the yard of Adam Grimm, who is said to have introduced American foul brood into this state from Italy more than 50 years ago. [Doubtful after 50 years.—Editor.]

While the inspection department has not had sufficient time to demonstrate conclusively the success of the area clean-up method, yet we have entirely freed a number of counties from the disease where there were but few infected yards. In heavy-infected sections where the inspection has been carried on for three successive seasons, the diseased apiaries have been reduced to a very small per cent. The inspection department has stopped the spread of disease into scores of diseased free sections and counties. I have come to the conclusion that the sooner we begin to treat American foul brood as we treat other incurable diseases, the better. No one thinks of treating the foot and mouth disease among cattle, except by the out and out destruction of all infected animals. If we could use that method and destroy all diseased colonies and infected material on the spot, we would soon have this disease under absolute control, from which you may observe that I am a ''fire worshipper.'' H. L. McMurry.

Madison, Wis.

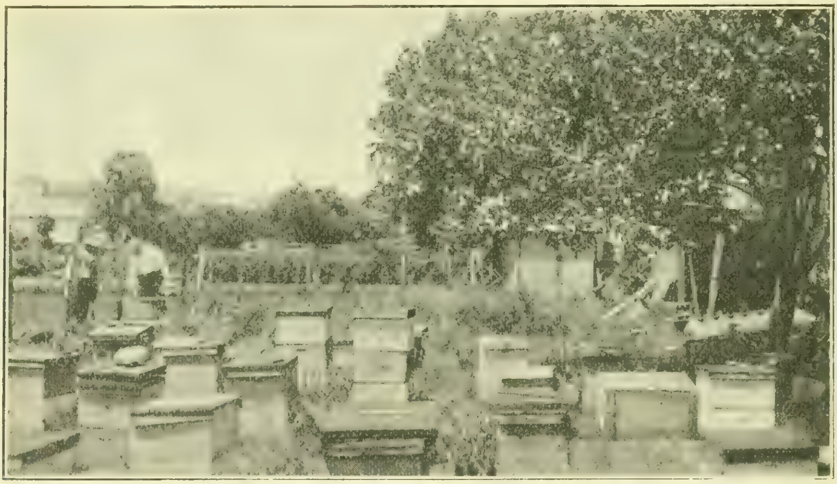


Fig. 2.—Seventy five per cent of the colonies in this cozy Little apiary were found to have American foul brood.

SIFTINGS

J. E. Crane

Grace Allen, on page 312, May Gleanings, refers to Miss Josephine Morse as a typical "sideliner," and she is right. Not only is she a typical "sideliner," but a typical New England woman. No one, to see her at a beekeepers' meeting, the lady that she is, would suspect the work she can do. The soil of New England is not as fertile as the prairies of the West and the Inter-mountain regions, or the Pacific coast. Our climate is harsh, our winters severe; but it is doubtful whether any other section of our country is better adapted to the production of strong, self-reliant men and women than this same New England. It is not at all surprising that she succeeds where others might fail.

* * *

A. P. Sturtevant, in the article commencing on page 298 on the "Brood Disease Variations," is most enlightening. I frankly confess I have never been able to tell to a certainty, in a small per cent of the cases that have come under my observation, whether it was American or European foul brood. After carefully studying his article one ought to be pretty sure of his diagnosis.

* * *

A colored man is said to have been building a fire with wet wood, and when called away for a little he returned to find his fire had gone out. He remarked with all the cheerfulness of his race, "Bless de Lor', if de fire has gone out de wood is left." So we beekeepers may keep cheerful if we find a few colonies in spring dead from queenlessness or other causes. We may yet be thankful that the hives, combs and more or less honey are left, with which to help other colonies or to make new ones when honey is plentiful.

* * *

That up-to-date article by H. H. Root on extracting honey on a large scale, commencing on page 302, is certainly interesting. While most of us do not do business on so large a scale, we may get some items of information that will be helpful. I was especially interested in the corrugated bottom of a capping-melter. The great objection to these melters has always been that the heat injures the quality of the honey. If the honey could be separated from the wax as soon as melted, it would help; but the honey rests on the hot pan and is prevented from running off quickly by the wax, unless the pan is hot enough to melt the wax as soon as it strikes the pan. While studying this problem a year ago I came to the conclusion that a corrugated bottom would help matters. I constructed a small model and found it to work well. The honey and wax as soon as melted would drop to the bottom of the corrugations and run off, while the wax unmelted would remain on the ridge until melted. I believe it a decided improvement on the flat-bottom melting pan and hope it may come into general use.

* * *

I am pleased to notice what J. L. Byer has to say, on page 318, about the loss of a half dozen colonies from queenlessness. It is the order of the day to say that every hive should be supplied with a young queen in the late summer or early fall, that every colony should be brought to its greatest productiveness. This is possible where one has a small yard of 20 to 30 or even 50 colonies, but when one has 500 or 1000 colonies, scattered through a half-dozen towns, it is not an easy matter. The supreme question then is, how may we secure the best or largest results from the time we have to spend with our bees? We often have to leave a good many things for the bees to do, and the superseding of queens is often one of them.

* * *

On page 309, under "Siftings," the statement was made that little was known of the value of insects in the fertilization of our fruits before 25 years ago. As I had depended upon memory, I wrote to the Agricultural Department at Washington to know the exact date when the value of insects in the fertilization of our cultivated fruits was discovered, and I have received a long letter from Prof. M. B. Waite, saying that the experiments that decided the question were made mostly in the spring of 1892, 30 years ago. I wish I had room to quote at length from his interesting letter on his painstaking experiments to discover the value and even necessity of insects in the production of pears and apples. Of course their value in the cross-fertilization of many plants was known many years before, and a most interesting account was given by Darwin some 60 years ago.

* * *

The following is sometimes a good way to take care of swarming for those who wish to take their work a little easier and can spend their entire time in one yard and do not take the trouble to clip the queen's wings: Whenever a swarm issues hive it in an empty hive and set it close to the entrance of the hive from which it issued. In three or four days shake it out, just at night, and let it run into the hive from which it came, and swarming is over for the present. I treated O. O. Poppleton's yard in South Florida in this way and it worked well, but he used large hives and ran for extracted honey.

IN A RENTED KITCHEN

CONSTANCE ROOT BOYDEN
(Stancy Puerden)

WHEN two families live together in a rented, furnished house for some five months two things are sure to occur—both housekeepers will be jolted out of some of their housekeeping ruts, and each of them will anticipate with joy the prospect of her very own home, especially her own kitchen. And this is said with no intention of disparaging either family or the pleasant, homelike, rented house.

The house in which we have been living since early in January has large, airy and sunshiny rooms with plenty of books, easy chairs and cushioned window seats, large halls, adequate closet space, bathrooms, porches and a beautiful yard with orange trees, deciduous fruits, rose-covered pergolas and flowers. The men and girls loved it on sight, and if our two boys had been here they would have loved it. We two housekeepers loved it too—at times. But there were times when the care of it seemed so burdensome that we became almost as depressed as a beekeeper when the sun refuses to shine during the honey flow.

The part of the house which we do not love at all is the kitchen in spite of the fact that we both enjoy cooking. While it is not a pretty, modern, white kitchen it has plenty of cupboard space, a large window, framing a beautiful view, over the sink and is equipped with a good gas range, plenty of utensils and conveniences and well stocked with linen. But (and it is an insuperable but) in order to get to the dining room one has to go through a door in the side of the kitchen next the sink, traverse a long serving pantry and go through a swing door into the dining room. Or one can choose another route through a door in the opposite side of the kitchen near the gas range on through the hall and living room and through double doors into the dining room. (I am not sure whether one goes through a door or a doorway, the house being dictionaryless, but I'll let it stand, for there have been many times when I have been impatient enough to go through the 2-inch doors themselves.) The distance from the kitchen to the dining room table is about the same by either route. Never, never again will either of us live in a house which hasn't a door leading direct from the kitchen to the dining room, not even if our husbands should become rich and we should keep several servants apiece. I think it would be difficult to keep them under such circumstances.

The partition between the kitchen and dining room is taken up with a wide and convenient sideboard with china closets, flanked by a storage closet on either end, one of which opens into the dining room and the other into the kitchen. The space between the two closets, on the kitchen side of the partition, is filled in with cupboards, open shelves and drawers, with an open workshelf at table height balancing a similar shelf on the dining room side. In the center of this is a small door, hinged at the top, through which food and dishes may be passed into the dining room, but because of the cupboards on the kitchen side and the china closets on the dining room side the passage is long, and I rather sympathize with one of my nieces who sometimes slangily requests, "Shoot me the glasses" when she is preparing to wash dishes.

The distance from here to the office, to which the men of the temporarily double family have to drive every day, is twelve miles, and they have three favorite routes, Huntington Drive, Valley Boulevard and Coyote Pass. Coyote Pass is supposed to furnish the draft from the ocean which delightfully tempers the climate adjacent to it. For that reason when the housekeeper who sits at the end of the table near the sideboard felt a draft on the back of her neck she christened the pass cupboard "Coyote Pass," and now we always allude to it that way and try to remember to close "Coyote Pass" when everything essential to a meal has been put through. And the route to the dining room through the hall and living room has become "Huntington Drive," while the serving pantry route is "Valley Boulevard." The latter also leads to a breakfast room, but as it was rather small for our number and quite as far from the kitchen as the dining room we never used it for that purpose.

WHEN we took this house we were glad to find it apparently well equipped with clocks. There was a good-looking mantel clock in the living room, a pretty little wall clock in the dining room, a stately and beautiful old clock, which would not run, in the library, and a large, old-fashioned pendulum clock hanging on the kitchen wall. We thought it quite fine to have a kitchen clock which struck with a sonorous tone. But whether the Ohio invasion or the January freeze hoodooed those clocks we have never determined; but soon after we moved in they struck, not as good clocks should, but like the miners on April 1. The dining room clock just laid down its tools without notice; the living room clock had a bad case of heart trouble and skipped ticks in a distressing way for several days before it too stopped work; the hour hand on the kitchen clock decided to take a rest at six, although the minute hand kept at work, and regardless of how often we coaxed the hour hand back on its job it would drop back to six the minute we turned our backs.

Our landlord came to our assistance, did a few mysterious things to them and then started all the clocks, having wedged some blotting paper back of the hour hand of the one in the kitchen. The clocks ticked regularly and reassuringly until he was out of sight and then each refused to work in its own peculiar way. We have long since given up argument with the dining room clock, but the living room clock is so willing that we still have hopes of it. It will generally run cheerfully for several hours after it has been persuasively tilted, and therefore on those days when someone has time to start it frequently we hear its companionable though intermittent tick. If urged a little at bedtime it has been known to run all night long, cheering the chance insomnia sufferer by telling her the approximate hour. Its striking is a little inaccurate.

For weeks the kitchen clock was absolutely reliable to this extent—we could always tell the time if we could remember the hour, for the minute hand kept almost perfect time. But sometimes we forgot to wind our watches or left them upstairs, forgot the hour and had to guess at it, with the result that the painfully punctual one of the two housekeepers arrived at church one Sunday morning when the service was three-fourths over.

BUT in spite of "Coyote Pass," obstinate clocks and a few other little drawbacks added to homesick pangs for the dear old homes in Ohio, we have had plenty of fun in the rented kitchen and the work has gone off much more smoothly and easily than we thought possible at first. The three girls and the two mothers have learned to do teamwork in preparing meals and washing dishes, one of the fathers has proved himself quite a chef in getting breakfasts while the two housekeepers were dressing and putting up school lunches, and we housekeepers have learned not a few things from each other. When we separate in June and go into the homes which we have bought I suspect the girls will be more or less lonely, the housekeepers will miss each other's intelligent assistance and the breakfast chef may miss his own coffee, which he now boils to his heart's content.

The following are some of the recipes which we found to be practical for the double family, ranging from eight to ten at various times:

Mutton Stew with Dumplings.

2 lbs. forequarter mutton
3 onions, sliced
3 carrots, diced
4 turnips, diced
1 tablespoon vinegar
1 teaspoon Worcestershire sauce
2 cloves
Salt to taste
Flour

Cut the meat in pieces suitable for serving, add the vegetables and cover the whole with cold water, bring to a boil, skim, cover closely and simmer until the meat is tender. When done, season, thicken the broth slightly with a little flour stirred smooth with cold water, bring to a boil again on a stove mat, drop the dumpings over it and cook, covered closely 12 minutes. Do not lift the cover until done. Serve the dumplings on a hot platter with the stew around them.

Dumplings for Stew.

2 cups sifted flour
4 teaspoons baking powder
1 egg
1 teaspoon salt
1 teaspoon margarin
Milk

Sift the dry ingredients together, cut in the margarin and add the egg mixed with enough milk to make a stiff, drop batter. Drop by the teaspoonful over the boiling stew and cook as directed above. The egg may be mixed with a little milk and more added to the batter if needed.

Lightning Cocoa.

½ cup cocoa
½ cup sugar
1 qt. milk
1 teaspoon vanilla
⅛ teaspoon salt
1 qt. water

Put the milk and water in a kettle over the fire, mix the sugar, cocoa and salt thoroughly and sprinkle over the top of the milk and water mixture. Bring it to a boil, flavor with the vanilla and serve with cream and more sugar, if desired.

Stewed Rhubarb.

2 lbs. strawberry rhubarb, cut small
1 cup granulated sugar
2 slices of orange
½ cup water

Put all the ingredients in an enameled saucepan, cover closely, set on an asbestos mat over the fire with the burner rather low and cook slowly until each piece of rhubarb is tender but whole and the juice red and clear. If the oven is in use for something else the rhubarb may be baked.

Scalloped Potatoes with Pork and Lamb Chops.

Potatoes
Milk
Flour
Pork chops
Lamb chops
Salt and pepper

Peel and slice the potatoes and arrange in layers in a shallow pan, dredging each layer lightly with flour. Season with pepper and salt and pour in milk until it can be seen between the potatoes. A little onion may be added, if liked. Arrange the pork and lamb chops over the potatoes and bake about two hours in a moderate oven. All pork chops may be used or all lamb. If no pork is used and the lamb is very lean, a little butter should be used to season the potatoes. It is well to turn the chops when about half done.

Oven Fried Mush.

1 qt. cornmeal
3 teaspoons salt
3 qts. boiling water

Pour the boiling water slowly over the cornmeal in a large kettle, stirring carefully to prevent lumping. Put over the fire until it thickens and boils hard (in little volcanoes) when the kettle should be placed on a rack in a larger one, the inner kettle covered closely, and cooked for an hour or more. If you have no rack the covers to baking powder cans or coffee cans will serve to raise the inner kettle enough to prevent burning. When done dip the mush into two bread pans which have been rinsed in cold water, and set aside until cold and firm. Slice the mush and place the slices in well-greased shallow pans (cooky sheets, if you have them), spread them liberally with fresh bacon or sausage fat and bake an hour in a hot oven. The prepared mush may be placed in the oven the night before. Then the housekeeper can slip down to the kitchen, light the oven burners and go back for a little nap before dressing. Serve with honey.

Apricot Marmalade.

2 lbs. dried apricots
1 can shredded pineapple
Sugar, honey or both

Carefully wash and soak the apricots overnight. In the morning put them through a food chopper and together with the water in which they were soaked mix them with the can of shredded pineapple. Measure the fruit and for every quart of fruit add three cups of sugar, honey or a mixture of the two in any proportion desired. Put over the fire and cook a short time until thick, taking great care to prevent scorching. This does not jelly but a very few minutes cooking will result in a thick spread for bread.

All measurements level.

Beekeeping as a Side Line

Grace Allen

ONE thing that I have been doing the last two springs more thoroughly than ever before is classifying combs. Before putting supers on the hives, I look them over comb by comb. Into one quickly scraped super go all the good combs, into another the second grade, and so on. Then I mark them—that's the new part. A little can of red paint sits on the worktable, and when a super is filled with first-grade combs, I paint a straight red line across the middle of the top-bars, thus marking not only the full super but also each comb in case they should get separated. These are straight, wired combs, with practically all-worker cells, and may be used at any time as part of the brood-chamber. It is particularly important to have only such good combs in the first super put on in the spring, as I usually let it be part of the brood-chamber. The shallow that was on all winter is almost certain to be filled with brood in the early spring. So that one is put above an excluder, and a new one given to the queen, in addition to her full-depth brood-chamber. So I must have only good combs.

The No. 2 combs, collected into another super, are marked with two red stripes. These are combs that may be used in the brood-chamber if necessary, but not until all the No. 1's are used. They are not bad, but are not so good as we like. Then those that have too much drone comb to be used for brood are marked with three red lines and are to be used only above the excluder, unless the drone comb is cut out and successfully replaced with worker comb. Any that get four red marks are to be cut out—later in the season, when there is no chance of their being pressed into service through some unexpected rush of nectar. These particularly bad combs, I hasten to explain, came into our yard largely—though not entirely—through purchase.

By leaving, so far as possible, only marked combs on the hives in the fall, one could gradually grade and mark all his combs. Such work, of course, is never really finished, for the season's use may make a difference with some combs—as we found this spring from moth and mold. But reclassifying then will be a small matter. Within another year or two we hope to have all the full-depth combs graded likewise; only a small number of them are done so far. The paint marks will gradually wear off, but they will have served us through this period of weeding out and classifying. Or they can easily be renewed, if it seems worth while.

Have you moved your bees? So asks every one who knows that we have moved ourselves. Except for taking the few colonies from West Nashville out to the country yard, we have left the bees undisturbed. They are fairly convenient, scarcely a mile away, and are well established in the yard we have so much enjoyed for two years. Perhaps some day we will move them, but for the present they are still there by the cherry orchard, with the hills beyond.

We were somewhat late getting at our spring work this year. On April 15 we started looking through the hives—a Saturday that closed with a sunset like the jasper and sapphire and flaming jewels visioned from the Isle of Patmos—like uplifted doors through which the very King of Glory might come in. And the next morning was Easter.

The result of our first examination makes us affirm most emphatically that beekeepers might well modify the dictum at present so popular, that you cannot leave too much honey with the bees in the fall. Possibly not, but you better examine them early the next spring. Because they have plenty of stores, don't think you can take your own time about your spring examination. The fact of having so much may be the very reason you must not delay. It doesn't hurt the bees to have a lot more than they will need, if they are not cramped for room; but it may be very inconvenient for the beekeeper, if, for any reason, he is prevented from making an early examination. Particularly when there is an early spring. A lot too much honey on the hives during winter calls for an early examination almost as emphatically as not quite enough honey does. (Only perhaps not quite so early.) The not-quite-enough may suffice if the spring comes early, but it calls for prompt and conscientious watching if spring is late. The lot-too-much, on the other hand, may be all right if winter hangs on late, but it requires prompt and conscientious watching if spring comes early—lest hives become crowded and queen honey-bound. Most of our own hives we found pretty crowded when we examined them in mid-April, though they had wintered, most of them, in story and a half hives, and the rest in two stories. Of course we wanted that brood, but because of so much old sealed honey in the hives, they really needed room a little earlier. Fruit trees had bloomed early, though not with particularly favorable weather right here.

But the great surprise of the season was the unusually early and enthusiastic blooming of the black locust. On April 14 we saw the first of it, and for the next few days more and more generously the beautiful white pendant blossoms were flung out to the already fragrant air, until the entire countryside was transformed with the beauty of them and heavy with their sweetness. On every side of our little country bungalow we could see them like fountains of white against the new tender green of other trees. Across the hill to the south they stretched like a band of unmelted snow.

This period of black locust bloom is all too often one of cold rains and general bad weather. It was cold this year—so cold that the bees accomplished little really vigorous, roaring work except from about 11:00 to 3:00. Yet while this low temperature may have distressed apiarian hearts, still the days, one after another in their breathless succession, were fair and bright and tingling. And with the world so beautiful around us, shall we let ourselves measure our delight in it only by the treasure brought to our hives? Or shall we count over with gusto the treasures folded away within our hearts for our eternal keeping?

There have been—of course—other discouraging things, too. There always are. In the honey-house, moths got into our stacked supers, some of which we had taken from the hives so late last fall that we had persuaded ourselves (for the last time, be assured) that all danger of moth was passed. Many good combs were found badly injured by these pests. How quickly one dose of carbon bisulphide killed them and put a stop to their unkind activities. There were other combs showing cells of spoiled pollen; others with cells of bubbly honey, evidently soured.

In the yard, several hives had combs with great discouraging holes where the bees had gnawed away places too moldy to clean up. One hive was queenless. Another had a large part of the otherwise nice worker-comb all knobby and distorted with the disastrous signs of a failing queen, drone brood in worker-cells. In this hive there were sealed queen-cells and also one that showed recent emergence of the queen. Surely the only way in which bees in such circumstances could get a normal queen, unassisted, would be by having started to rear one before the old queen completely failed to produce fertilized eggs. This particular young queen, of which we caught a glimpse a few days later, looked like any other.

In one hive an old bottom-board had rotted partially away, and up through the open space thus afforded had come a colony of white ants, the first ones I can remember ever seeing. The floor of the hive was heaped with fine earth, and upwards to the very top of each of two full-depth combs stretched—what shall I call them?—sort of dirt roads or passages, reaching to a corner of the hive where there was a very City of Ants, or at any rate a very popular and populous suburb. We gave the bees a new bottom-board and brood-chamber, scraped the hard-caked mud from the combs and poured gasoline into the hole in the ground that looked like ant headquarters. Several times, as usual, in the warm snug place between the inner and outer covers, we found black ants. And as usual we sprinkled liberally with borax, which has never yet failed to drive them off. Chilled brood was being dumped out on several doorsteps.

But what of it?—what of all these awkward, inconvenient, disappointing and unprofitable things? We could not care deeply. Mocking birds were singing and black locust was in bloom and beauty laid her magic on the hills.

Then, too, there was a mystery. Every beeyard has at least one mystery a year. Just as I reached the yard one noon I saw a swarm in the air near a hive not yet examined. At first glance I thought it was coming out, but the next instant discovered that it was entering the hive, the front of which was a solid curtain of bees. Clipped queen, I thought with satisfaction. The return of the swarm being so far accomplished, I merely sat down on the hive and watched the entrance idly—scarcely hoping to see the queen come in. But I did see her—and she was not clipped. On opening the hive a few hours later, I found queen-cups with only eggs in them. I clipped the queen, put her on a frame of brood with nine empty combs in a new brood-chamber, with a queen-excluder and the old brood-chamber above. There they still are, apparently content. O you who are wiser than I, why, having swarmed with an unclipped queen, did they come back?

By the cherry orchard with the hills beyond.

FROM NORTH, EAST, WEST AND SOUTH

In Southern California.—The season is conservatively estimated at from two weeks to one month late. Perhaps one month is very nearly right. The sages began yielding a little nectar about April 20, and the oranges at about the same time. But the flow was so slight until about May 1 that only the very strong colonies were able to get even enough nectar to live on. The lighter colonies had to be fed. About May 1 both the black sage and the oranges began yielding quite freely until now (May 5) considerable surplus is being stored. Where the locations are favorably situated on warm south hillsides, the black sage seems to be yielding more plentifully than the average orange.

Occasionally in a season like the present the orange trees bloom much earlier on the south side of the tree than on the north side. This always presages a much longer blooming period. A very warm north wind for a few days brought the bloom out quite rapidly, but again the weather changed and cold cloudy days prevailed for about 10 days. So much cold weather made the colonies very backward about going into the supers and caused the uneasiness that often brings on the desire to draw queen-cells and to swarm. Practically all of the old honey was consumed, and many beekeepers fed sugar to keep up the morale of the colony.

One is surprised, when traveling around, at the number of beekeepers that have ''sprung up'' within the past three or four years, who have from 50 to 150 colonies. Just what effect this will have on the future of the industry is hard to conjecture. Selfish is he who wants a good thing all to himself; but if a business is overdone in a certain locality in any line so that even the man long established there cannot make a living, all are injured, no one benefited and the business often almost ruined.

If the beekeeper would keep posted and know what he should get for his honey, when a buyer came along, he could say: ''My honey is worth so much. If you want it, all right; if not, all right.'' When no attention is paid to markets and when bee journals at one dollar per year are too expensive, so long will the beekeeper lose enough on his honey sales each year to keep in the role of paying the other fellow's office rent and for the other fellow's good times—instead of spending the money for his own home comforts.

Co-operation and the exchange ideas are all right, but there seems to be a lack of ability among beekeepers to grasp properly the fundamentals necessary to carry the honey sales business to the success it rightly deserves. When the organization gets beyond a certain number of members or a given locality, it gets unwieldly and beyond the control of the average man engaged in the production of honey.

In other words, the producers of honey, generally speaking, have not the business ability to manage satisfactorily the marketing of a million dollars worth of honey. The unfortunate ending to three years of effort in the California Honey Producers' Co-operative Exchange proves that the handling of large crops of any kind calls for men long educated or skilled in marketing.

The Exchange was organized at a time of extremely high prices on honey, and the reconstruction period immediately after the war tried many a business and has proven disastrous to our Exchange. In many cases more money was advanced to the producer than the honey sold for. Consequently, it will be necessary for Mr. Beekeeper to make good by returning the over-advance which he received.

This, of course, makes an unfortunate condition, as most men spend all they get and will have to provide some way of raising the money. A few are dissatisfied and at present refuse to pay, but the great majority are fair-minded and will meet what they consider a just obligation. Notwithstanding all of the discouragements, between 30 and 50 per cent were willing to join the reorganized Exchange. Just what the outcome will eventually be, the writer is at present unable to state. Suffice it to say, the beekeepers have learned many valuable lessons during the past few years and will in the future be much better able to judge the prices they should rightfully receive for their products. L. L. Andrews.

Corona, Calif.

* * *

In Northern California. From all parts of our section have come reports that the past winter and spring were the coldest ever experienced. Heavy frosts throughout April were frequent, and winter and spring losses were heavier than usual. In a few restricted localities they were as high as 50 per cent to 70 per cent. Contributory factors towards this high death rate were lack of a sufficient amount of young bees reared last fall, lack of sufficient stores and insufficient protection. In the past too little attention has been paid to the above important considerations. Usually most of our localities have a fair fall flow and, in the past, nature has taken care of the winter's supply of young bees. Last summer, however, we experienced a severe hot spell, and, as a result, the fall plants secreted but little nectar. Thus, many colonies were compelled to enter into an unusual winter and spring, lacking their usual quota of fall-bred bees. Many colonies passed away from the above cause, and others from a shortage of stores. Sheltered or protected colonies fared better than

FROM NORTH, EAST, WEST AND SOUTH

those exposed to the inclemency of the weather. The broodless period had been longer than usual, and most of the losses occurred during the building-up period in March. During this month there was an actual shortage of pollen along certain sections of our coastal region. Several hundred colonies were forced to give up breeding, and subsequently died. There was plenty of honey but not a cell of pollen in the hives. Depleted apiaries are still fresh in the minds of some of us, and we should analyze the causes thereof so that when fall arrives we may avoid future losses. The essentials to bear in mind are a young queen, a fall flow or feeding, stores and protection.

There have been no alarming reports of brood diseases. European foul brood especially seems to be on the wane with reports of infection ranging not higher than five per cent. Better beekeeping is making itself felt, and our county inspectors everywhere are working very energetically to reduce American foul brood. Inyo, Madera, Monterey, Napa and Solano county inspectors report that their spring cleaning is well under way.

It is rather difficult to judge the season's prospects. It will be a season that will commence nearly one month late in most sections. To date the rainfall is below normal, and during March there was an unusual amount of cold dry winds. The year ought to bring nearly an average crop. Outside of the irrigated districts some rain during May would help more than any other one factor to insure a most excellent crop.

Big Sur, Calif. M. C. Richter.

* * *

In Oregon—After a very much prolonged and cool spring, the bees are beginning to build up rapidly. The Oregon maple which came into bloom on March 20 last year started yielding nectar one month later this year, being followed immediately by fruit bloom and dandelion. With this abundance of nectar in the field, and with fairly continuous good weather for the past two weeks the bees are regaining much which was lost. However, in many localities the winter loss will run from 10 to 20 per cent, and in some individual cases much higher. Much of this loss was due to starvation during February and March. During this time European foul brood got a start, but is now being more or less held under check and under proper care cleaned up by the bees.

There seems to be a growing demand among fruit-growers for bees for pollination. Most of the fruit men are renting bees rather than buying. The prevailing rental price is from $3.00 to $5.00 per colony.

The local supply of honey has been practically cleaned up for some time, and retail prices remain approximately the same.

Corvallis, Ore. H. A. Scullen.

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In West Virginia.—The swarming season began in earnest the first part of May, which is about one month earlier than usual in this country, taking everybody by surprise. Bees did exceedingly well during the month of April. The brood-nests were crowded with honey and brood unexpectedly to the beekeepers, which fact caused the heavy swarming. I visited one beekeeper who had taken advantage of the season and put on his supers early in April, and on April 27 he told me that the bees were capping the first super. This is out of the ordinary in this country, as we do not expect any surplus until about May 10.

Bees in general are in good condition for a honey crop, and the floral prospects are good. This refers to modern beekeepers, as last year was a hard year in many parts of the state and the old box-gum beekeepers were almost wiped off the map. Winter stores were light and practically no feeding was done. I know one man who had seven old box hives and got through the winter with three, two of which were very weak. I also heard of others who lost practically all theirs. We have many beemen in this state who still cling to the old way, partly because they have not as much as heard of the standard hives equipped with movable frames. I myself read my first article on bees in the year 1920, not because I was not interested but because I had not heard of Gleanings in Bee Culture. Since that time I have read every thing on bees I could find. The public needs more education on the bee industry. I would suggest this be brought about through our county agents, who could talk face to face with people that would be glad to subscribe for Gleanings.

Kenova, W. Va. L. Perry.

* * *

In Indiana.—Bees in northwestern Indiana came through the winter in excellent condition except that a much larger proportion than usual were short of stores, and many losses resulted from starvation. The shortage of food was probably due to two causes: first, warm weather in September brought about late brood-rearing which forced a larger proportion of honey into the supers; and secondly, a larger amount of stores was consumed, owing to comparatively warm weather later in the season.

With an abundance of rainfall, both last fall and through March and April, clovers are in fine condition. Fruit bloom and dandelion were never more plentiful and, since the opening of these blossoms, the weather has been fine every day, so that many colonis are now (May 7) working in the supers. Nevertheless, it is extremely difficult to forecast a honey crop.

American foul brood is becoming quite prevalent in this locality and is causing a considerable loss. European foul brood, which practically wiped out many large apiaries about 15 years ago, has practically disappeared. This disease is no longer considered a menace since we have learned how to handle it. Judging from some of the recent articles in Gleanings, it would seem that there are even yet some beemen who haven't learned the trick. For their benefit let us repeat: Strong colonies, Italian stock, prompt treatment. Don't wait till the colony becomes rotten with disease but go through the hives every two weeks and treat at once when discovered. A practical mode of treatment is this: Kill the queen, in 10 days destroy queen-cells and unite with a strong colony, preferably Italian, by placing the diseased colony on top over a queen-excluder and sheet of newspaper. I have used this treatment with hundreds of colonies and European has been entirely eliminated. But, say, don't try this plan with American foul brood. E. S. Miller.

Valparaiso, Ind.

* * *

In Wisconsin.—May the third, and the season so far is normal with the average season. Clover is in normal condition in our immediate vicinity. Outdoor-wintered bees wintered perfectly and better than cellar-wintered bees. The outdoor-wintered colonies are very much in advance of the cellar colonies. Prospects for a crop are normal here at this time.

We have 250 colonies in modified Long Idea hives, 20 Langstroth frames in one hive-body, permitting the use of ten-frame supers side by side above these lower 20-frame bodies. These hives are packed all the year around, excepting the supers when they are on the hives.

Previous to this time (June) we have examined our colonies once in April, general condition, bees, queen, amount of brood and honey being recorded. Normal colonies that have five or more frames of brood and four or more frames solid full of honey at this time (end of April) need no more attention until fruit bloom when a super is given, as they are likely to have 10 or more frames of brood by that time and of course the 20-frame hive full of bees. More supers are added in June before the honey flow. At the beginning of the honey flow all colonies and every frame of brood are carefully examined for American foul brood. We have not had any for nine years, but all this time it has been a few miles away.

We are not obliged to do anything whatever in or with the brood-chamber to prevent or control swarming. We do shift supers and add supers according to the needs of the colonies. That is all the colony work we do during the honey flow. We have less than 5% of natural swarms per season. Our cellar-wintered bees are in ten-frame Langstroth hives, and we and most other beekeepers here practice a mild form of the Demaree plan for swarm control; allow the queen two brood-chambers until the clover flow, then keep the queen in the lower chamber with three or four frames of mostly unsealed brood; the balance of the brood is placed in supers above a queen-excluder. A few frames of brood are placed in the center of each super, so that a line of brood-combs will extend from the bottom of the hive to the top of it without a break. This system does not shock the colonies and cause a setback as it might with a complete break of brood between supers and taking too much away from the queen below at one time. However, it seems to be necessary to remove more frames of brood from the brood-chamber again every week to 10 days and raise them above the excluder. On a small tryout we had no swarming by simply allowing the queen two 10-frame brood-chambers, one above the other, and adding the supers above. We think that this would not prove reliable every year.

Greenville, Wis. Edw. Hassinger, Jr.

* * *

In New York.—Bees have wintered exceedingly well and built up rapidly during April where they were supplied with sufficient stores; but, on account of such heavy brood-rearing during April, many colonies will be short of stores and will have to economize during May unless supplied by feeding or a good flow from fruit blossoms or dandelions. For this reason they may not come into the clover honey flow in June in as good condition as they should.

Owing to last summer's severe drouth clover was thin and small last fall. Early spring rains helped it considerably and it was looking quite promising until the very cold spell came on the last week of April, with the mercury dropping to 16 degrees. In some places this was accompanied by dry weather and a northwest wind. Clover now has a dry, withered appearance and does not look very promising. We do not believe that clover throughout the west end of the state promises a 50 per cent crop on an average with no prospects at all in some localities. However in many seasons fair yields of honey are secured from rather thin stands of clover, for usually the thin stands are left to thicken up with other grasses before being cut, affording the bees a longer period for working it. It is therefore always advisable to be prepared with

FROM NORTH, EAST, WEST AND SOUTH

plenty of supers for a bumper crop, even though we may not expect to use them.

New York is again to be favored with a real live extension specialist in beekeeping in the person of Prof. R. B. Willson, who will take up the work about June 1. Mr. Willson is a native of New York, a graduate of the College of Agriculture of Cornell University, of the class of 1917, and for the past several years has been beekeeping specialist in Mississippi. New York has been without a beekeeping specialist since Prof. Rea resigned several months ago.

Prospects for a fruit crop are exceedingly good for everything except Baldwin apples. H. M. Myers.

Ransomville, N. Y.

* * *

In Alabama.—The weather to May 1 has been very good for queen-rearing and package-shipping, and most of the bees have built up well but at the expense of the stores. Colonies have been living for weeks on what they could gather and a few days of bad weather would bring on starvation, although they were left an unusual amount of stores in the fall.

In the black belt of Alabama and Mississippi the main honey flow is on before June 1, and all danger of swarming is over. The main work of the beekeeper at this time is to see that all colonies have plenty of room to take care of the crop.

If the crop is good there will be many bee keepers who failed to put up the necessary supplies last fall. These will send rush orders to the supply dealer so that he will be swamped with orders, and they will have a chance to kick about the service.

Several beekeepers of this vicinity enjoyed a treat on April 29, when A. I. Root visited Montgomery and talked to them of his early trials and experiences. E. R. Root also talked on some important topics of the day. J. M. Cutts.

Montgomery, Ala.

* * *

In Ontario. Following a March unusually fine, we have had an April here in Ontario that has been very trying indeed for the bees. Here in our locality bees carried pollen only four or five days during the whole month, and freezing nights were invariably followed by cold raw days. When the sun was shining, some bees would venture out, and in many cases they went never to return.

Thanks to fair wintering they have held their own better than some years, but I think it is safe to say that the bees, generally speaking, are not in nearly as good condition as they were a month ago. I am almost ashamed to say that in three of our apiaries about 10% of the colonies are short of stores and, as I have often stated, I regard spring feeding as a sort of nightmare. These three apiaries had a continuous light flow during all of last August, and the bees went into winter quarters altogether too populous and seemingly started early brood-rearing and used up their stores. All of these light colonies are in 8-frame Jumbo and 10-frame Langstroth hives. The 8-frame Langstroth hives in the other apiaries are all right, and the 10-frame Jumbos also have enough stores. Of course the smaller hives were made ''solid'' with stores last fall, while the larger hives that are now short seemingly did not get quite enough. Needless to tell you, we have again made a resolve of ''never again'' being in the position of being forced to feed bees in the spring. As menory serves me, I think I have made this same ''resolve'' at least once before.

Clover has been also checked by the long spell of cold weather; but, as it wintered well, it is still looking good in our locality. However, I hear it is ''heaved'' some where we have five apiaries south of Hamilton in Wentworth County.

Last week I was again in the wholesale section in Toronto, and inquiry failed to locate any great amount of honey. Seemingly there is but little of last year's crop in the dealer's hands, and it is unlikely that there is much left in the hands of the producers, since beekeepers usually do not hold honey over when they have any reasonable offers to dispose of their crop.

I think that one of the best moves made in recent years toward protecting beekeepers' interests is the concerted effort being made by experts in the matter of keeping ''Isle of Wight disease'' out of this country. I have long felt that we were living in a fools' paradise by claiming that our climate here in America was not suitable for the development of this dread disease on this continent, and now that it has been found in the Alps, that idea is dissipated: and at the same time the danger becomes apparent, since there is no telling how soon it may invade the sections from which Italian queens are imported. By all means, drastic efforts should be made to keep out this scourge, for, if once established here on this continent, it is quite likely that it would seriously cripple the industry if not wipe it out in many places as it has done in Great Britain.

These lines are being written on the first day of May. I have just returned from working at one apiary, and it was pleasing to see the bees getting pollen and nectar again. This reminds us that, if spared, we shall soon be in the rush of the busy season again. May health and strength be the lot of the many readers of Gleanings, and may success crown the efforts put forth in 1922.

Markham, Ont. J. L. Byer.

HEADS OF GRAIN FROM DIFFERENT FIELDS

To Prevent Foundation Stretching When Hiving Swarms. Here is a "kink" which I have not seen in print and which is of value. In hiving swarms on full sheets of foundation the weight of the bees sometimes causes the foundation to become stretched. To prevent sagging, place an empty hive-body (no frames) underneath. The cluster will attach itself to the bottom-bars of the frames above, thus relieving the foundation of the weight of the bees. The empty hive may be removed in a few days after the bees have begun work. E. S. Miller.

Valparaiso, Ind.

[In addition to preventing too much weight on the foundation, the empty hive-body is also of great value if the newly hived swarms are inclined to swarm out. In most cases it will prevent swarming out. For this purpose, it should be left in place three or four days.—Editor.]

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West Virginia as a Honey State. At one time West Virginia produced considerable honey. One region in particular was especially rich in nectar resources. I refer to the famous Canaine Valley, a scope of country 10 by 20 miles in extent, lying on the head waters of Black Fork of Cheat River. This valley was once an inland lake 3,500 feet above sea level. In early days great quantities of wild honey were obtained from trees, sometimes 100 pounds from a single tree, a tubful from another, and a barrel in rare instances. This was all in bygone days when the limestone region which extends north and south through the west-central part of the state was being cleared and seeded down to grass. The hills would show literally gray with white clover. Almost every farmer had his log bee-gums and produced abundance of honey and had a well-filled larder by killing off the heavy ones. The light ones were saved for next year. W. C. Boon.

Shinnston, W. Va.

◆

How to Transfer Bees and Secure Good Crop. On July 16, 1920, I captured a small stray swarm and for want of a hive put them in an empty nail keg, and to my surprise they secured stores enough to winter. I had therefore this year one keg of bees, spring count. I intended to transfer and divide them on April 15, but a cold snap caught a queen in transit and she arrived dead. So I placed a hive above the keg with an excluder between, the entrance being through the hive. Another queen arrived on the 25th when I moved the keg to a new location and introduced the queen without any difficulty. I placed another hive over the keg without an excluder; but the queen did not come up until June when I put the excluder on to keep her up until all brood was out. Then I put on an escape, did away with the keg and introduced another queen on July 8. I extracted from both colonies the last week in July and again in October, with the following total results: 41 combs fully drawn, 238 pounds of extracted honey, 97 sections (completed), 20 incomplete which were fed back, five pounds of wax and two strong colonies with about 40 pounds each for winter stores. All extracted honey was sealed before extracted, and the sections weighed about one pound each. I have given away some of the honey, have all we want for our own use and have sold to the amount of $52.80.

Royal Oak, Mich. A. W. Stone.

◆

A Swarm-Control Plan That Never Fails. The following extract from a letter of a beekeeper in New York, together with my reply, may be interesting for publication:

> I expect to use your swarm-prevention plan as given in Gleanings in June, 1921, but will use the Demaree plan or a modification of it in addition, as I do not think your plan would prevent swarming in every case.

Our plan of swarm prevention, if you may call it a plan, never fails. Sometimes *we* fail, but the plan if properly carried out never does. If it comes to a show-down, just take out the queen long enough so they have no brood young enough to start more cells, destroy all the cells they have started and introduce a young laying queen. As a matter of fact, I object to our system being called a "plan," as one would speak of the Demaree plan. What I am asking for is intelligent care of the colonies through this critical time, just as a farmer would care for his animals through critical periods in their lives. I think you realize that it is time for beekeepers to get past the wasteful wholesale methods of care, which might be compared to old-time cattle ranching where thousands sometimes perished for lack of individual care.

Georgetown, Ont. Morley Pettit.

◆

Easy Way to Hive Swarms. I take three frames of strong empty combs and fasten a ⅜-inch narrow board across the middle of the top-bars, leaving a good space between combs, using ⅝-inch screws to fasten the board to the frames. I then fasten a wire to the center of the board to hook in a loop on the end of a pole about six to eight feet long. When a swarm has settled I go to them with a ladder and with my knife cut away any small twigs that may interfere with the combs and put them up against the cluster when they will at once go to them. I then tie the pole on the ladder till all the bees have settled on them, then take them down. I have my hive ready with four frames lifted out so I can unhook the wire from the pole and drop the cluster and frames into the open space, giving it a good shake after stopping the front entrance a few minutes to stop the rush of bees. I then take out the combs the bees were on and drop in the combs first taken out, which I have close at hand, and put on the cover. If I do not get all the bees the first time, I put the combs back in the tree again, and when all have clustered I take them to the hive and shake them in front. W. S. Williams.

Julian, Pa.

* * *

Cool and Dry Weather in Southern California. We are having the worst conditions of weather for beekeeping we have had for many, many years, considering the amount of rainfall we had during the past winter. March and April were comparatively dry. Unless we have rain soon and some warm clear weather, there will not be more than one-fourth to half a crop, and we may be lucky if we have our bees fill up for winter.

Word comes to me that many tons of sugar were fed to bees in certain sections of southern California. Bees that have been left rich or full of honey the previous season will come through in much better condition and not need to be fed. The fact is, many extract too closely and bees go through the winter in a weakened and starving condition, which causes a great loss to anyone that follows that practice.

The exaggerated reports of the great crop of honey expected will be far short when the crop is harvested. These exaggerated reports always have a depressing effect upon the price of honey. A late issue of a beekeepers' periodical of this state, by mistake, made me say that an immense crop is expected in California. I wish to state through your journal that this was not written by me. We can not be sure of a crop until we get it into the cans.

Ventura, Cal. M. H. Mendleson.

* * *

Yellow Italians Swarm More Than Darker-Colored. I sent for a few yellow three-banded Italians from Alabama a year ago and noticed the difference in behavior between these yellow Italians and my darker Italians in swarming. I hived a swarm in June of the yellow kind in a Jumbo hive, and the same colony swarmed again in August. The same is true of another colony of yellow bees hived in June. They had many queen-cells started in the first part of August, and if I had not given them so large a super and strengthened other colonies from this hive when I noticed the queen-cells started, they too would have swarmed again in August. My darker Italians do not swarm this way in the fall. Emil A. Lund.

Vining, Minn.

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Good Yield in Oklahoma. I started with one colony of black bees in 1918. Now I have eleven colonies of Italians. I had seven colonies last spring. I made increase and after selling six nuclei I have eleven colonies left. One of them had European foul brood so I had to treat it during the honey flow and of course it made no surplus honey. The other ten colonies produced 1000 pounds of extracted honey and 130 pounds of chunk honey. I sold the chunk honey for 25c per pound. I have sold 900 pounds of extracted honey for 20c per pound. H. Sharp.

Shawnee, Okla.

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Colony With Two Laying Queens and a Queen-Cell. On June 16, 1921, I requeened a colony with a queen-cell and on June 29 the queen was laying. In looking through this colony on August 11 I saw a little black queen, so I supposed the other queen was dead. Not being satisfied with this queen I decided to requeen the colony. I opened the hive on August 25 to kill the queen and found a laying queen which I killed. She did not look like the one I saw before, so I looked farther and found another laying queen. Next I found a sealed queen-cell which I destroyed. This colony had one brood-chamber and two comb-honey supers, two laying queens and a sealed queen-cell in one hive at one time. I think this is unusual.

Trevose, Pa. E. Sterner.

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Wavy Combs From Vertical Wiring. J. E. Crane has some combs over 40 years old, free from sag, built on the Van Deusen wired foundation. I tested the Van Deusen foundation, and some of the combs are practically perfect. In hot weather there was a serious waviness and bulge between the vertical wires, and there is a serious tendency for the sheet to curl, even when put in frames with three horizontal wires. If I were to use any foundation such as the Van Deusen, containing vertical wires about an inch apart, I would want all combs drawn before very hot weather, and the sheet of foundation with its vertical wires to extend down between the halves of a divided bottom-bar, to stop the tendency to curl. E. F. Atwater.

Meridian, Idaho.

HEADS OF GRAIN FROM DIFFERENT FIELDS

To Take Swarms Down from High Trees. When the bees cluster on a high limb and one can not get out to them, we throw a line—at least my son James does. He was in the navy on the "Kearsage" and can "throw lines" pretty well—over a limb above the one the bees are on. Then we hoist up a hive with one brood-comb and several empty combs in it. The bottom of this hive projects about a foot (or more) in front. We have another line attached to the hive so we can swing it in any position we wish. By jerking down on the line we jar the bees on to the platform and top of the hive. It is well to have the top set back, say, an inch or two, so the bees can enter directly through the top. John M. Ware.

Opelousas, La.

* * *

Short and to the Point. A good queen is worth from five to twenty-five dollars, but a poor queen is worth very little.

A large working force at the beginning of the honey flow is the same as money in the beekeeper's pocket; but a weak colony at this time is worthless as a surplus-honey producer.

One worker bee of the right age, at the beginning of the honey flow, is worth more than three after the flow is over.

Plenty of super room discourages swarming. Insufficient super room is a stimulation to swarming.

A large amount of drone comb in the brood-chamber signifies a poor beekeeper.

The amount of food used in rearing two drones will rear three workers. A worker is a producer; while a drone is a consumer.

Weak, queenless colonies denote a neglected apiary.

A modern hive in the hands of a slipshod beekeeper is no better then the old box hive or log gum.

A scientific beekeeper is not judged by the number of colonies he keeps, but how he keeps them.

A super of honey on the hive is worth two in the field. Eugene Holloway.

Marietta, Okla.

* * *

Good Results from Colony Transferred from Tree. I transferred from a tree a large colony of bees, with brood and all suitable comb, into three ten-frame hives, dividing the bees and brood as equally as I could, introducing southern-reared queens in the two queenless ones, adding two frames of foundation to each colony and placing a division-board beside the frames. This was done at the beginning of the fruit bloom. About two weeks later one of these little colonies swarmed. I put the swarm in a ten-frame hive, giving them a comb from one of the other colonies. I commenced to feed these colonies a little sugar syrup in an Alexander feeder as soon as they were transferred, adding full frames of foundation as needed. I also cut out queen-cells from the one that swarmed, introducing a southern queen. I was surprised how fast they increased in numbers and filled their hives. About the 20th of June I put on full-depth supers, raising up a frame of brood and filling out with frames of foundation. These four colonies drew out 65 full frames of combs, and I extracted 180 pounds of honey from them.

Nashville, Mich. Will G. Hyde.

* * *

Beekeepers Less Observant Than Formerly. It has appeared to me that during the latter years the scientific interest which formerly made beekeeping so enhancing has been somewhat on the wane, and been substituted by articles of practical results, which can be very interesting; but, as long as we have not a full understanding of the swarming problem, I regret that such is the case. So much has been done for us modern beemen in the time past that we ought to "take up the burden and the lesson" and solve the swarming problem within the next decade. And this can surely be done only by keeping up the scientific interest. Here I must say that, in my own experience, the large number of colonies in modern beeyards is not conducive to scientific observations. Axel Holst.

St. Thomas, Virgin Islands, U. S. A.

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Requeening Without Dequeening. While keeping bees in New Mexico, I tried out a plan of requeening without dequeening, that might interest some of the readers of Gleanings. I tried to get virgin queens to mate from the lower story with an excluder between the lower and the upper stories, the old queen being in the upper story, but met with very poor success. I tried the plan with the virgin queen in the upper story and the old queen below with an entrance in the upper story, but that would not work either. I found by the use of a wire screen between the two stories to stop the bees from mingling and by giving them a separate entrance in the upper story the virgin queen will mate all O. K. I found the best plan is to make up a nucleus in the upper story and give it a ripe queen-cell, then after the young queen begins to lay, the old queen can be removed and the wire screen taken away. I make the entrance for the nucleus in the back end of the hive. A. N. Norton.

Homedale, Idaho.

BEES, MEN AND THINGS

(You may find it here)

Bradford County leads the other counties of Pennsylvania in the production of honey. There were 6729 hives in the county last year and an average price yield was $6.50. This makes the entire yield in the county $42,738.50. So, beekeeping in Bradford County is quite an enterprise. Ten years ago beekeeping was a thriving industry throughout the state, but the spread of foul brood wiped out thousands of hives. With the improved methods for fighting bee diseases, the industry has once more become profitable, with the result that thousands of new hives are being placed in the state annually.''—Phil. Browning, Broome County, New York.

''We are having a very late spring. No fruit trees in bloom here yet (May 9).''—W. J. Sheppard, Nelson, B. C.

''The cold late spring has cut our prospects for a honey crop here 25% in my opinion.''—L. L. Andrews, California.

''Bees are in fine shape. Surplus coming in at the rate of 25 pounds a week.''—Farmer F. Shaw, Houston County, Texas.

''Honey flow is fine here from holly and black gum and ratan, but not ready to take off yet.''—M. N. Wheatley, Sevier County, Ark.

''If the bees had not been fed here this spring we would have lost at least 75% of the colonies.''—W. S. Pangburn, Jones County, Iowa.

''More honey consumed at home than ever before. Small beemen last season disposed of their entire crop by selling to farmers.''—Dr. J. E. Miller, Idaho.

''Selling honey was also a great pleasure to me. I sold $60.00 worth in one afternoon. I think that is good for a beginner who must meet all those big questions they fire at one.''—Geo. H. Foote, Wood County, Ohio.

''I have never lost a colony of bees in the cellar in my life. And I never allow a queen to get over two seasons old, and this year they are all of this summer's rearing. Thirty-two of them.''—Edw. Holt, Vernon County, .Wis.

''I have very much enjoyed the articles which have appeared in Gleanings in the past months on the subject of securing more perfect combs. I, myself, have experimented a great deal during the past few years on different systems of wiring. I have about come to the conclusion that I like four horizontal wires and one vertical in the center as well as any. Still, no way which I have tried is always entirely satisfactory by any means.''—L. J. Ray, Los Angeles, Calif.

''The prospects in the tupelo belt look favorable. A great many bees are short of stores, especially those that were not carried up out of the swamps to the farming belt. Some beekeepers report as high as 25% winter loss.''—J. L. Morgan, Franklin County, Fla.

''This strong hive of bees was increased to ten strong colonies by July 15 and produced 167 well-filled pound-sections of honey. Can you beat it?''—John S. Reese, Clark County, Ky.

''Place corn cobs thickly on the surface of standing water. They draw the water like a wick up to where the bees can fill up without wetting their feet. Patent not applied for.''—I. W. Cameron, Turner County, S. D.

''I am glad to see some one sticking up for the poor drone. He is not nearly as bad as he is painted. If his mother is good, he is a useful citizen. My motto is, 'Millions of drones from good Italian mothers, but not one black.' ''—V. V. Dexter, Kittitas County, Wash.

''This season is certainly an improvement over last in being more normal. Fruit is blooming nearly a month later than last year. Cool nights and warm afternoons make plenty of nectar, and the bloom is being prolonged. Bees wintered better on less stores than last also.''—R. E. King, Dickinson County, Kansas.

''My bees wintered outdoors packed with straw 100%. The prospects for honey are the best I ever have seen; also the fruit trees look like a bumper crop. There was lots of honey carried over here from last year. No market here for honey at present. The resort trade will use up all that is carried over I think.''—A. W. Pease, Grand Traverse County, Mich.

''As a matter of fact I believe bees do think, perhaps not just as we think, but in a fashion suited to their own nervous system and needs. Their thinking is perhaps more comparable to that of a chauffeur than to other more intricate mental processes. The chauffeur sees an object, his mind enables him swiftly to change his course. The more I worked with bees the more I was convinced of this ability to turn impression into action. I have been environed by psychologists all my life who fight me about my definitions, but I would just like to see one of these psychologists keep bees for a time and take care of them and love them and understand them and then see what he would think about it.''—Anna Botsford Comstock, Tompkins County, N. Y.

GLEANED BY ASKING

Geo. S. Demuth

QUESTION.—What part of the bottom of the cell does a larva that is three days old cover? One that is 36 hours old?

W. Holmberg.
California.

Answer.—Three-day-old larvae cover about three-fourths of the base of the cell. Larvae 36 hours old cover about one-fourth of the base of the cell.

Comb-honey Supers and European Foul Brood.

Question.—Is there any danger of spreading European foul brood by the comb-honey supers if there is no honey in them?

Minnesota. Ephraim Magnuson.

Answer.—There should be practically no danger of transmitting European foul brood by means of empty comb-honey supers that have been stored in the shop all winter.

Weight of Queen and Her Eggs.

Question.—How much does a queen bee weigh? How many eggs does she lay in 24 hours and how many of her eggs would it require to weigh one grain? John F. Johnson.

California.

Answer.—The weight of the queen bee varies according to whether she is laying heavily or not. During the winter when she is not laying at all she would, of course, weigh the least. Ordinarily, she weighs about .25 of a gram or about three and one-half grains. A good queen is capable of laying 3000 eggs in 24 hours, but she does this only during a short period in the spring. The eggs when first laid weigh about .00013 of a gram but weigh less when about ready to hatch. It would therefore require about 500 of these to weigh one grain, or 240,000 to weigh one ounce.

Bees Kill Clipped Queen.

Question.—Is there any danger of the bees killing the queen having her wings clipped, after a number of attempts to swarm?

New York. Roger C. Hinsdill.

Answer.—Yes, if the queen is not lost during an attempt to go with the swarm, the bees after several attempts will give up trying to swarm with the old queen and will wait until one of the young queens emerges, when a swarm will issue accompanied by a young queen, the old queen having disappeared.

Age When Young Bees Begin Field Work.

Question.—How long is it after emergence before the young bees begin gathering nectar?

South Dakota. E. A. Frey.

Answer.—Young bees usually begin to work in the fields when they are about two weeks old, though under some conditions they begin field work several days earlier.

"Put Up" Plan for Swarm Control.

Question.—What is meant by the "put up plan" for swarming? A. T. Cox.

New York.

Answer.—The "put up plan" is the name used by Dr. Miller to designate a treatment for colonies that swarm. The hive is moved away and a new hive put in its place, the new hive containing two or three frames of unsealed brood, but there must not be any queen-cells on these combs. The old hive is then set on top of the new one so that the bees in returning from the field will all enter the new hive. This so depletes the old hive of its bees that the colony gives up swarming and the queen-cells are destroyed. After about 10 days the old hive is put back in its former position and the new one taken away for increase. Instead of setting the old hive on top, it can be placed at one side with its entrance turned far enough away so the returning bees will not enter it, then a few days later, turned back so the entrances are close together before reuniting. When the old hive is set on top, it is placed, bottom and all, above the cover of the new hive, there being no connection between the two hives, each colony having its own entrance.

Empty Chamber Below to Prevent Swarming.

Question.—What is your opinion of the efficacy of placing a super containing only empty frames beneath the brood-chamber as soon as winter is over, to prevent swarming? F. H. Bunt.

Mexico.

Answer.—This will, of course, delay swarming, and in some cases if this delay is sufficient to carry the colony past the critical period for swarming or to the close of the honey flow, swarming is prevented; but in this country, especially in the North, it can not be depended upon to prevent swarming. This is the principle of the Simmins method, the theory of which is that, as long as combs are being built below the brood, there will be no swarming. This plan was tried out in this country many years ago and abandoned as being not at all dependable when swarming is bad.

Changing Supers to Another Hive Without Removing Bees.

Question.—When shifting supers from one colony to another, is it necessary that the bees all be driven out before putting the super on another hive? Frederick Spiker.

West Virginia.

Answer.—Not if there is a good honey flow at the time this is done. During a heavy honey flow it would not be necessary to drive any of the bees out, so far as danger of their fighting is concerned. At other times it is safer to drive most of the bees out, but it is not necessary that all be driven out.

Cause of Loafing During Honey Flow.

Question.—What was the cause of my bees quitting work last summer while the honey flow was still on? J. E. Arnold.

Oklahoma.

Answer.—There are so many things which will cause the bees to work with less vigor during the honey flow that it is not possible to tell what was the trouble in your case.

When bees are uncomfortable from any cause such as a lack of ventilation or being exposed to the direct rays of the sun, they are inclined to hang out on the outside of the hive even when nectar is abundant in the fields. Sometimes loafing is caused by the brood-chamber being clogged with honey. When much honey is put into the brood-combs and especially if it is sealed, the bees will work with less vigor in the supers. This is usually brought about by a slow honey flow or by weak or medium colonies. Sometimes loafing is caused by the colony being queenless and sometimes by the lack of room for depositing the thin nectar as it comes in to be ripened. When the nectar is first carried into the hive it is distributed a little in many cells, instead of the cells being filled with nectar, the bees refusing to put in more when the few drops are in each cell. For this reason it sometimes happens that there is no room for the incoming nectar, even though the combs are light until the nectar has been evaporated and converted into honey.

Demaree Plan for Swarm Control.

Question.—What is meant by the Demaree plan for swarm control? Chas. Fealy.
Alabama.

Answer.—The Demaree plan is the term now generally applied to taking the combs of brood out of the brood-chamber and placing them in another hive-body which is then placed above a queen-excluder, the queen being confined below where empty combs or frames of foundation have been put in the place of the combs of brood. If this is done after queen-cells have been started preparatory to swarming, some prefer to have only empty combs or frames of foundation together with one or two empty combs below; but, if done before any queen-cells have been started, the usual practice is to put one comb containing a little unsealed brood below. This brings about a condition somewhat similar to that brought about by swarming, the swarm being below the queen-excluder and the parent colony above. In 1910, A. C. Allen, Portage, Wis., described a modification of the Demaree plan by which the chamber of brood is placed on top of the extracting-supers instead of immediately above the queen-excluder. This was given at the Wisconsin convention on Feb. 3, 1910, and has been adopted by others and described several times since.

When Further Swarming May Be Expected.

Question.—Is there any danger of either the swarm or the parent colony swarming again the same season when swarms are made artificially by shaking and the parent colony is given a young laying queen immediately? Otto Saewert.
Wisconsin.

Answer.—Some seasons either natural or artificially made swarms will again build up to great strength and swarm again if the honey flow is long. When parent colonies are given a laying queen immediately after swarming there is a possibility that they may swarm again; but, if you destroy all the queen cells five days after the swarm issued, then again five days later before giving the young laying queen, the parent colony is practically safe from further swarming the same season.

Requeening in Swarm Control.

Question.—In Farmers' Bulletin 1198, page 42, you say, "Now in ten days remove the hive-body containing the queen to a new location, destroy all queen-cells in the upper story which will be placed below for a new brood-chamber and give a ripe queen-cell or a young laying queen." Why not destroy all but one queen-cell and allow the bees to raise their own queen? A. H. Trine.
Indiana.

Answer.—Unless the stock is such that it is desirable to perpetuate it, it is better to destroy all the queen-cells and give one reared from select stock. Many beekeepers start queen-rearing operations in time to have plenty of young queens reared from a breeding queen under the best possible conditions ready at swarming time for such cases. Plenty of young queens on hand during the swarming season are of great value in swarm control. One objection to destroying all but one of the queen-cells is that sometimes a swarm issues when this young queen emerges, leaving the colony hopelessly queenless.

Using Combs Which Contained European Foul Brood.

Question.—Would it be safe to put package bees on combs on which the bees have died from European foul brood? A. E. Moorlag.
Michigan.

Answer.—Much depends upon the condition of these combs. If they are apparently clean and have been exposed to the light during the winter, there should be but little danger of transmitting the disease; but, if they have been in tight piles in darkness all winter, the disease can be carried over and transmitted to the colony in the spring. Combs from colonies having European foul brood should be exposed to the light as much as possible before giving back to the bees. Even then it is safer to give them only to very strong colonies.

When Swarm Loses Its Queen.

Question.—When a swarm issues and loses its queen (she having her wings clipped), then returns to its hive, what is the proper thing to do with the colony? D. E. Scott.
Tennessee.

Answer.—Destroy all but one of the queen-cells and permit the colony to requeen itself with this remaining young queen; or, a better way, destroy all queen-cells five days after the swarm first issued, then again five days later, after which introduce a young laying queen. One objection to the first plan is that sometimes the colony so treated will swarm when the young queen emerges, leaving the colony hopelessly queenless. When the second plan is used great care is necessary when destroying the queen-cells the second time, for these, being built over older larvae, are sometimes difficult to find, since such queen-cells do not project far beyond the comb.

JUST NEWS

Editors

THE average winter loss in the United States is 9.4 per cent, compared with 8.5 per cent in the preceding winter, and an average of 12.4 per cent for the seven winters preceding. Weakness of colonies or deficiency of young bees due to poor queens, short food supply late last summer, disease, etc., caused a loss of 3.6 per cent; poor winter stores, causing dysentery, killed 1 per cent; failure of the beekeeper to leave enough honey in the hives, or to feed if the nectar flow was scanty, caused starvation to 2.1 per cent of all colonies; lack of proper winter protection permitted 1 per cent to perish; and other miscellaneous and unspecified causes led to the death of 1.7 per cent. All told, almost one colony in ten was lost. The above percentages are based on returns from thousands of beekeepers in all parts of the country.

* * *

The beekeeping law for the state of New York has been amended this year and signed by the Governor. Two points of amendment are worthy of consideration: ''Persons keeping bees shall keep them in hives of such construction or form of construction that the frames may be easily and readily removed for examination of the brood for the purpose of determining whether disease exists in the brood.'' There is also a provision which says: ''No person or company shall transport, or receive for transportation, any bees from a point within the state to any other point unless said bees are accompanied by a certificate signed by an authorized inspector of the Department stating that such bees are in good healthy condition.'' These amendments are to take effect June 1, 1923. This will give beekeepers an opportunity to change their box hives for frame hives.

* * *

In our ''Who's Who in Apiculture'' last month we gave the name of A. W. Strickland, Big Timber, as secretary of the Montana State Beekeepers' Association. It now appears that there are two beekeepers' associations in Montana and that the secretary of the Montana State Beekeepers' Association is Frank E. Clift, Huntley, Montana. For British Columbia we inadvertently published the name of W. J. Sheppard, Nelson, B. C., as secretary of the British Columbia Honey Producers' Association instead of that of John Brooks, Vancouver, B. C., secretary of the Beekeepers' Association of British Columbia. In Maryland the name of Prof. E. N. Cory should have appeared as state inspector instead of that of C. H. Harrison. Mr. Harrison is assisting in teaching in beekeeping in the college. Also in this state the answer should have been ''yes'' in the column showing whether beekeeping is taught in the college as well as in the next column in regard to inspection, although in this state no separate funds are available for inspection work, this being done in connection with the regular extensios work of the Agricultural College.

* * *

The following is the schedule of beekeepers' meetings as far as definitely arranged by the Schedule Committee of the American Honey Producers' League: South Dakota meeting to be held at Mitchell on June 9: Oregon at Portland on June 24 and also at Hermiston on July 1, and at Ontario, on July 3; Texas (Beekeepers' short course) at College Station, July 24 and 25; Wisconsin Beekeepers' Chautauqua at Green Bay, August 7 to 11. The following meetings are to be held on the following dates but the places of meeting have not yet been decided upon: Central Oregon District, June 29; Missouri, July 7 and 8; Mississippi, July 17 and 18; Pennsylvania, August 4; New York, August 5; Vermont, August 12; New Hampshire, August 16 and 17; Tennessee, August 21 and 22; Alabama, August 23; Georgia, August 24 and 25; North Carolina, August 30 and 31.

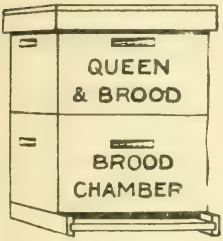
* * *

''Beekeeping in the Clover Region,'' has recently been issued by the United States Department of Agriculture as Farmers' Bulletin No. 1215. The authors are Dr. E. F. Phillips and Geo. S. Demuth. The clovers included in the discussion of this bulletin are white clover, alsike clover and red clover. In the introductory paragraph, it is said that beekeeping practices in the United States have been developed largely in the clover region, and because of this fact the literature of the subject deals chiefly with methods applicable to this territory. Nevertheless the clover region is failing to produce the honey it should, says this bulletin, chiefly because the methods that give the best results for the region are not clearly analyzed and there are so many to choose from that the beekeeper can with difficulty decide which are best. The purpose of the bulletin is then stated as endeavoring to simplify the problem of the beekeeper of the clover region by describing those practices which have been proved most effective. A single system is outlined in the bulletin, and this is the one which the authors believe will give the best results in most clover locations. Address the United States Department of Agriculture, Washington, D. C., for Farmers' Bulletin 1215, if you wish this valuable contribution to beekeeping.

TALKS TO BEGINNERS

Geo. S. Demuth

THIS month should bring the main honey flow in the greater portion of the United States and Canada. Wherever white clover or alsike clover furnishes the greater portion of the nectar for the honey crop, beekeepers will watch anxiously this month for indications of the beginning of the honey flow. When it comes both bees and beekeeper will be busy and happy if the season is at all favorable. In the southern portion of the clover region (the southern boundary of which is roughly the Potomac and Ohio rivers, though in certain spots farther south white and alsike clover are important honey plants), clover may be expected to begin yielding about the first of June or even a few days earlier; while farther north it may not begin to yield until about the 20th or even later, the exact time of beginning depending largely upon the weather. It is usually about 10 days after the first few scattered clover blossoms are seen before the honey flow from clover begins; but, too often, bad weather interferes to postpone the beginning still further.



Previous to the honey flow the queen occupies both stories.

In the West and the Northwest where alfalfa and sweet clover are the main sources of nectar, the honey flow may also be expected to begin sometime this month. In this region, especially at higher elevations, the honey flow may not begin until late in the month.

Even in some locations in the South, June is the honey month; so that for most of the country this is indeed the "high tide of the year," so far as beekeeping is concerned.

How to Recognize the Honey Flow.

The beginner will have no difficulty in recognizing the beginning of the honey flow, for, coming as it does in many places after a dearth of nectar, the greatly increased activity of the bees going in and out of the hive is quite noticeable. By watching the returning bees as they alight at the entrance, one can tell if they are heavily laden by the distention of their abdomens and the manner in which that part of the body hangs downward as they slow down to alight.

Inside the hive, the newly gathered nectar can be seen glistening in the cells even in the midst of the brood-nest wherever a cell happened to be vacant, and the comb-builders begin to put white wax on the combs or between and above the top-bars of the brood-frames.

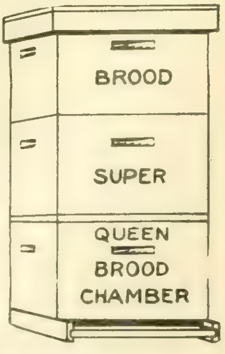
One of the most noticeable things inside the hive at the beginning of the honey flow is the sudden expansion of the colony, the bees now crowding into the most remote parts of the hive if the colony is strong. If the super is not already on the hive, it should be put on at once to give room for this expansion.

Change in Management When Honey Flow Begins.

While previous to the honey flow the thing of greatest importance in the management was to encourage the rearing of a large amount of brood in order to have a great horde of workers for the harvest, the problem at the beginning of the honey flow is to get the most out of these workers. Two things now stand out of supreme importance in the management, the prevention of loss from swarming and the supplying of room for surplus honey at the right time and in the right manner while the honey flow lasts.

Sometimes the honey flow proper lasts only a week or two, and five or six weeks is considered a long honey flow. A large crop of honey can be secured within a short time if all goes well, for sometimes the daily gain runs as high as 15 pounds or more during the best part of the honey flow, so the importance of having every condition just right to induce the bees to bend all their energy to gathering and storing can readily be appreciated.

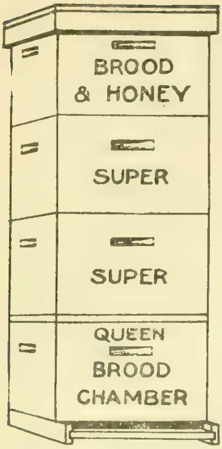
Much depends upon keeping pace with the colony as it expands its work, to be sure that a portion of the crop is not lost from want of room in which to store it and keeping the bees comfortable so that their work can be carried on without interruption. Too often beginners supply themselves with but one super and lose a large part of the crop because they have no more. Some seasons a single super is enough to hold all the surplus honey of the season; but, if the season is good, four or five supers for each colony may not be enough.



Queen is put below excluder and brood placed above the super.

Management of Supers for Extracted Honey.

Strong colonies that were given a second story several weeks previous to the honey flow, as advised in these talks last



When another super is needed it is placed immediately above excluder or above first super.

month, should be given a third story at the beginning of the honey flow, if not before, when extracted honey is to be produced. When this third story is given the queen should be put into the lower story and confined there by a queen-excluder. The queen will usually be found in the upper story at this time. To do this the upper story should be set off and placed on another hive bottom, with no more disturbance than necessary and without smoking much at the top, which might cause the queen to run down into the lower story; after which each comb should be carefully taken out and looked over until the queen is found, when she can be picked up by the wings and transferred to the lower story. The queen-excluder should then be put in place, and, if the weather is warm, an extracting-super filled with empty combs set directly above the queen-excluder, the former second story being placed on top as the third story. If empty combs are not available for this, frames filled with foundation should be used, in which event the combs of the former second story should be divided between the two upper stories to induce the bees to draw out the foundation promptly, the combs of brood being placed in the middle with frames of foundation at each side.

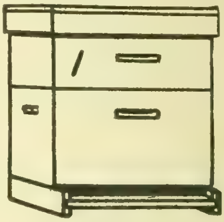
Ten days later these combs in the upper story should be examined to find and destroy all queen-cells, unless it is desirable to make increase, in which case three or four of these combs with adhering bees can be put into a new hive to form a nucleus, being sure that at least one of these combs has queen-cells on it. When this is done, frames of foundation should be put in the super to take the place of the combs of brood that were taken away.

These combs of the former second story having brood in them are to be left above the queen-excluder until the brood emerges and the combs are filled with honey, when the honey may be extracted or (a better way) left on the hive for reserve stores for winter and spring.

Additional supers should be added if more room is needed, giving each additional super just a little before it is needed rather than wait until the colony is compelled to slow down its work on account of a lack of room. When the new super contains frames of foundation (nothing less than full sheets should be used) instead of empty combs, it is a good plan, when each new super is added, to take off all but one of the supers, then take out half of the partly filled combs from the middle of the super left on the hive, and put in frames of foundation to take their place, the combs removed being put in the new super, with the other frames of foundation, which is then put on as the third story, or, if near the close of the season, it can be placed on top.

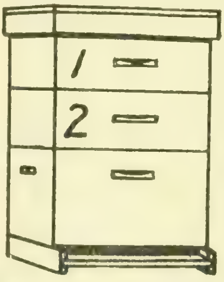
Management of Supers for Comb Honey.

When comb honey is being produced it will not do to put the super of sections on top of the second story, if a second story was given previous to the honey flow to supply more room for the queen. Neither will it do to put it between the two brood-chambers, for the bees in building comb in the sections would darken it with bits of wax from the brood-combs above; so it is necessary to reduce the colony to one story during the honey flow for comb honey. In doing this most of the brood should be put into the brood-chamber that is left, choosing as far as possible the oldest brood, which can be distinguished by its emerging bees or by picking off a few cappings to note the age of the pupae. This older brood will soon emerge, giving the queen more room for eggs. If there are three or four colonies to work with, the extra combs containing some honey and brood, after the bees have been shaken off, can be put back into the hive-bodies, which are then tiered up on top of one hive, choosing for this the weakest colony. If the season is favorable this colony should fill these combs with honey after the brood has emerged, thus furnishing a large reserve of stores to be distributed to the other colonies after the comb-honey supers are taken off at the close of the season, thus again making them two stories high.

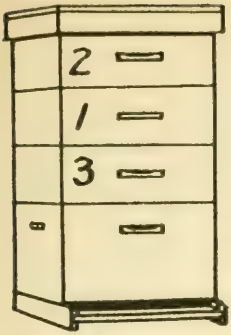


A prompt beginning in the first comb-honey super is important.

Those who have but one colony will have to work out some other plan for disposing of the extra combs of brood and honey, if the colony is occupying two stories at the beginning of the honey flow. One way to do this is to form a small colony from the extra combs of brood. This should not be attempted unless there are more combs of brood than will go into one brood-chamber. If the colony is quite



Second super placed below the first.



Third super is placed adjacent to brood-chamber and first super just above it.

strong there may be from two to five extra combs of brood. In such cases, these extra combs of brood, together with the adhering bees, should be put into another hive together with the combs which contain no brood, being sure that the queen is left in the main colony on the old stand. When making increase in this way, combs of emerging brood should be taken instead of combs of unsealed brood, in order to enable the little colony to build up without losing any undeveloped brood by chilling. The entrance should be closed with grass to confine the bees in this little colony the first day, so that too many of them will not go back to their old home.

While this little colony can raise a queen, if some of the brood-combs contain recently hatched larvae or eggs from which to raise her, queens reared in small colonies usually are not as good as those reared in larger colonies; so it may be better to purchase a queen for this little colony.

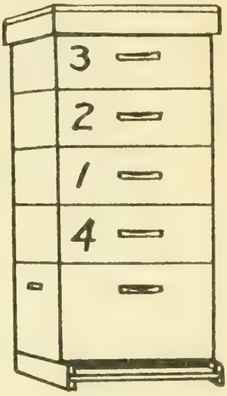
Just when to give the second comb-honey super depends upon the strength of the colony and the rapidity of the honey flow. If the bees enter the first super promptly and begin working in most of the sections at about the same time, the second super should be given within a week if the bees continue working well, even though the first super is less than half full. If things look favorable for a continuation of the honey flow this second super should be placed below the first super adjacent to the brood-chamber. If the honey flow is slow or the colony is not strong, so that the bees begin work in only a part of the sections in the middle of the super and work outward, it is better to put the new super on top until the bees begin to work in it there, when it can be placed below and another empty one placed on top, if needed. No comb-honey super should be raised up and an empty one placed under it until the bees have drawn out the foundation and started to build out the cells in every section. Placing the empty super under the partly filled one causes the bees to expand their super work more rapidly than when it is placed above. This is highly desirable when the honey flow is heavy and the colonies are strong; but, if the work in the supers is expanded too fast, the sections will not be so well filled and at the close of the season there will be too many unfinished sections.

In order to encourage the bees to finish the first super promptly, some beekeepers prefer keeping it in position as second super until it is finally finished. When more than two supers are given, those which are partly filled are each in turn transferred to a new position above the one nearest completion, as shown in the accompanying illustrations, thus keeping the first super near enough to the brood-chamber to cause the bees to finish it promptly if the colony is strong and the honey flow is good.

Keeping Colonies Comfortable Reduces Swarming.

During hot weather the bees should be kept as comfortable as possible. It is well for the beginner to keep in mind that if the bees are always comfortable and have plenty of room there is much less tendency to swarm than when conditions are less favorable. The hives should be shaded by means of shade boards which project beyond the edges of the hive if single-walled hives are used, and the entrance should be opened to full size, giving an entrance ⅞ inch deep by the full width of the hive.

While there is plenty of nectar to be had the bees should not be permitted to cluster on the outside of the hive. This indicates that the colony needs more room or more ventilation. Of course, after the honey flow has passed it is entirely normal for the bees to cluster on the outside of the hive during hot weather, but during the honey flow they should all be at work.



First super left in same position until finished.

If any colonies swarm in the midst of the honey flow the swarm should be hived as described last month, so that the working force of the colony shall not be divided during the precious hours of the honey flow.

When swarming occurs in the midst of the honey flow, the swarm should not be given a new location, for this divides the working force of the colony so that neither the swarm nor the parent colony is able to do much work in the supers. But when the swarm is hived in a new hive, placed on the old stand as described last month, and the supers are transferred from the old hive to the new one, the newly hived swarm will have all of the field bees, so that work in the supers should continue without interruption. The parent colony being moved to one side loses its field bees because they enter the new hive on the old stand as they return from the fields. A week after the prime swarm issued, the parent colony is again moved to a new location, this time some distance away to prevent after-swarming, which again strengthens the new colony.

OUR HOMES

A. I. ROOT

> And the Lord God said, It is not good that the man should be alone. I will make him a help meet for him.—Gen. 2:18.
>
> Whosover liveth and believeth in me shall never die.—John 11:26.
>
> Eye hath not seen, nor ear heard, neither have entered into the heart of man, the things which God hath prepared for them that love him.—I. Cor. 2:9.

My good friends, I am once more back in my Ohio home—or at least, *a part of me* is here. But more of this later on. Now if you wish to get the most good out of this Home paper, and at the same time save me repetition, please turn back to page 42, last January, and read it over. I told you there, that when I came home with an armful of groceries I found Mrs. Root lying on the floor of the kitchen. I think her head rested on one arm, or at least she looked perfectly natural. Her face was peaceful, just as if she were asleep, and no mark or trace of any suffering could be seen. I took hold of her hand, and it seemed as warm as usual, and then I laid my hand on her face, thinking she was only in a faint. I called my nearest neighbors; and as a doctor happened to be in the neighborhood we had him in a very few minutes. Then I hastened back, and called her by name; and finally with quivering voice, I said, ''O Sue! Can you not answer me?'' It was the first time in the sixty-five years of our acquaintance that she had failed to answer. I might also say it was the first time she had failed to give me her bright smile of love, and faithfulness to our marriage vow. There are women, and I am afraid there are wives, who have their spells of pouting or refusing to talk. Mrs. Root never had such a spell for *even an instant* in all of our married life. Of course we had our difficulties. I mentioned one of them in our December issue. At another time one of our boys was disobedient, and flatly declared that he would not obey his father, and it was in regard to quite a vital matter. Mrs. Root was present, and she begged to be allowed to take the young man in hand. In fact, it was about the first time in his life that he had begun to feel the *manly* impulse, and along with it he had got the boyish idea in his head that he was just as good a judge of what was proper and right as his father, or maybe a little better. I was brought up in the old Connecticut style—''spare the rod and spoil the child,'' and I do not know but I was thinking about the ''rod'' for ''desperate circumstances.'' Mrs. Root and I, for almost the first time, did not agree; but I remembered my religion sufficiently, to think it was time for me to stop, and I shut my mouth and refused to say anything further. But we two, for almost the first time, did not feel pleasantly toward each other. Before going to bed, however, there was to be a prayer by the bedside, and I, at least, was not in a praying frame of mind to kneel down. After considering a moment I smilingly put out my hand to her; and, oh how quickly she took it in both of her hands and then put her arm around my neck and cried! Instead of discussing the matter further in the morning with the boy, I said nothing. I let the good mother manage the affair. My good friends, you who have faith, will believe me when I say, a mother's love is a stronger power, a stronger force, than all the ''rods,'' and I do not know but I might say than all *prisons* and *penitentiaries* on the face of the earth. O dear mothers whose eyes rest on this page, do you realize the power that the loving Father has placed in *your* hands and hearts? Once more let me quote:

> The hand that rocks the cradle
> Is the hand that rules the world.

or at least *is* now ruling the world. Let us now go back.

When the doctor arrived he took a tiny flashlight from his pocket and turned up one of her eyelids and then shook his head. Said I:

''Doctor, do you mean to say that there is no chance?''

He shook his head again, and said the test he had made had never been known to fail. Then I slowly began to realize what it meant to me—never more in *this world* could I again see my greatest friend, instructor and adviser. The only hope of ever seeing her again, and being once more united to the dear wife, was in the world to come, after death. And then I began considering and going over what good proof poor humanity has of a future meeting. Of course it all comes from the Bible, and, I might almost say, from the dear Savior's words; for he alone passed through death and came back to life. With all the progress that is being made in the sciences, in scanning the heavens, in making new discoveries pertaining to health, electricity, wireless, etc., nothing has ever touched that great unknown life beyond this. I hope you all agree with me when I say the spirit rappings of years ago, and everything that has come along that line amount to just nothing. I feel like saying that no person having good sound sense will listen for a moment to what spiritualists have in the way of proof.

I commenced hunting my Testament for the words of the Savior. I studied his words as I never did before. Our good pastor came to my rescue, and I questioned him. He referred me to quite a number of passages. The dear friends who have sent in words of comfort and sympathy have given me inspiring passages from God's holy word along the same line, but I am sorry to tell you that they did not at the time seem to be very satisfying; but while I was in the dilemma I happened to notice an inquiry in the Christian Herald as to what *proof* we have that we shall know and recognize each other in the world to come. The editor gave quite a number of quotations—in fact, I think he gave pretty nearly a whole page—but finally concluded by saying the dear Savior did not see fit to give us anything very positive. But the Christian Herald said we are to take it as granted from the mass of evidence that comes so close to it; and our church hymns are full of it, especially the gospel hymns given us by Moody and Sanky.* I am now going to tell you a little of my researches. Our good pastor gave me all the passages that he could hunt up. Somebody suggested (or maybe it was the Holy Spirit) the declaration of Christ in the parable of the lost sheep, where he says, "Joy shall be in heaven over one sinner that repenteth, more than over ninety and nine just persons which need no repentance." After this follows the parable of the prodigal son. Now comes the question, who is it in the above that rejoices? By an examination of both passages it seems pretty plain that it is not only angels but the inhabitants of the earth who have gone to their reward. They are permitted to know what is going on here in this world of ours to a sufficient extent, at least, to see the work of spreading the gospel and reclaiming lost souls. Of course things are not going on in heaven as here on earth. You will remember they were going to puzzle the dear Savior once by telling about a woman who had had seven husbands, and they asked him whose wife she should be in heaven. He replied, "When they shall rise from the dead, they neither marry, nor are given in marriage; but are as the angels which are in heaven."

Now, friends, while they neither marry nor are given in marriage in heaven, they no doubt respect marriages made here on earth; and *repentance* is all made in this life instead of the life to come. I think I am right about it, am I not? The only chance to *repent* is here on this earth.

Moses and Elijah at the transfiguration give us very plain and positive evidence of the life beyond the grave; and we can take it for granted that these two veteran heroes were well acquainted and were keeping tab on affairs here on earth. Well, in Luke 23, verses 42 and 43, the penitent thief's dying words were, "Lord, remember me when thou comest into thy kingdom"; and then came the quick and blessed response, "Today shalt thou be with me in paradise." This matter came up years ago on these very pages; and somebody tried to spoil my rejoicing over it by saying the word "paradise" ages ago did not mean what it means to us now. I replied that I did not care what it meant or means now. To be with Jesus would be paradise to me without anything else. And please notice that the dear Lord did not say that he and the penitent thief were to be alone in paradise. Every penitent thief since the beginning of the world, no matter what his sins, provided they were truly repented of, was included. And, by the way, I think this would include both Moses and Elijah. At the time of the dear wife's removal from this earth everything seemed to center on the words of the dear Savior. I have been spending hours in hunting up all of his precious words to a sinful world. My faith in him, since he, in almost one moment "lifted *me* from the sinking sand," shall never fail. A sainted follower of the Lord Jesus, in olden times, ended a verse thus:

"But this I do find.
He'll not be in glory
And leave me behind."

That describes my own faith in the Lord Jeus Christ better than anything else I can think of.

Notwithstanding the comfort I received from reading the Bible, and praying every day, again and again sorrow for the dear lost wife would come back to me; but searching the scriptures, and prayer were a great help, and the kind letters I received were an additional help. Let me give you two of them. The first comes from H. G. Rowe. In years gone by Mr. Rowe was one of the pupils in my Sunday-school class. In closing a letter he writes as follows:

> May I now express to you my sincere sympathy in those sorrowful days that are yours? I

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* By the way, it occurs to me I should tell you that, after searching my Testament, I began to feel a great longing for the Gospel Hymns. (I find in a pocket edition there are something over 400 of them.) In starting mission Sunday schools, years ago, we made great use of these Hymns, and in many places and on many occasions I had to lead the singing, and so I was more or less familiar with the greater part of them. Well, right after Mrs. Root's death these Gospel Hymns had a new attraction and a new meaning. Snatches of them would come to memory not only during the day but sometimes in the night; and it was a wonderful comfort to me to be permitted to sing them aloud. It finally came to be understood that if I should break out singing some of these precious old hymns in the middle of the night no one was to pay any attention to it; and even now, after Mrs. Root has been away almost six months, every few days a new hymn comes to me that gives me wonderful comfort and joy. The chorus of one of Wesley's hymns came to me just this morning, and set me to praising God, both for the melody and the beauty of the sentiment it expresses. It is as follows:

"I do believe, I now believe
That Jesus died for me,
And that he shed his precious blood
From sin to set me free."

have very, very often thought of you since Mrs. Root's death, and I have learned with very great satisfaction how bravely you are bearing this burden of sorrow. May I tell you of a little incident that happened immediately after Mrs. Root's death here? Several of the office men were standing together speaking how heavy the blow was that had fallen upon you, when one said this: ''You fellows all say how lonely A. I. Root must be down there alone in Bradentown, but I want to tell you he is not alone the way you or I would be, for he, literally, walks in the friendship and companionship of God. and God is just as actually at present a friend to him as his dead wife could be.'' I could not help thinking what a compliment this was to your religion and your faith in that religion.

Again expressing my sympathy to you and extending to you my every well wish, I am,

Yours sincerely, H. G. ROWE,
Managing Editor, Gleanings in Bee Culture.

Let me now tell you, my dear friends, that the man who said the above in quotation marks was none other than the boy Jacob of years ago (see page 582, September, 1921) whom I told you about, and whom I found in the Abbeyville Sunday school of years ago. Perhaps he has put it a little too strongly in saying that God is just as actually present, and is just as good a friend to me, as was the dead wife. I felt that I did not really live up to that high standard, but I tried hard, and prayed that I might be strengthened by that high testimonial.

Another letter comes from a good Christion friend of mine, and a beekeeper of years gone by, Mr. Christian Weckesser.

To my dear old friend A. I.: You have my sincere sympathy in your loss. I think I know how to sympathize; while my own loss seems so great, and though she was called away over a year ago, the loss is as keen as ever, to me; still the lines of Whittier come to mind often. I will enclose them. Christian Weckesser.

Doylestown, Ohio, March 30, 1922.

''And yet, dear heart, remembering thee,
Am I not richer than of old?
Safe in thy immortality,
What change can reach the wealth I hold?
What chance can mar the pearl and gold
Thy love hath left in trust with me?

''And while in life's late afternoon,
Where cool and long the shadows grow,
I walk to meet the night that soon
Shall shape and shadow overflow,
I cannot feel that thou art far,
For near at need the angels are.
And when the sunset gates unbar
Shall I not see thee waiting stand
And, white against the evening star,
The welcome beckoning of thy hand?''
—Whittier.

If you will turn to page 253 of Gleanings for April you will see that our talented friend Grace Allen has grasped hold of the same faith that inspired Whittier in the quotation above.

Let me tell you that my days and hours have not *all* been sorrowful. There have been times when I felt the presence of the Holy Spirit to such an extent that I got at least a *glimpse* of what Peter calls ''joy unspeakable and full of glory.''

In closing let me say that the salvation of this whole world depends, in my opinion, as much, and perhaps more, on the faithful observance of the marriage vow taken when you two started out in life together. If you hold fast to anything, as sacred and important, let it be your marriage vow. Dear Mrs. Root—bless her memory—was faithful every hour and every minute of the 61 years we lived together.

In 1859 I got hold of a book on shorthand entitled Pitman's Manual of Phonography. At that time I was keeping a diary, and writing in it every day. But my homemade shorthand was such that it is almost impossible for anybody to read it now; but my long-time friend, W. P. Root, has managed to ''translate'' the following:

''Tonight ends the year 1859, and tomorrow it will be 1860. Another year has past and gone. The greatest event of this year has been a reconciliation with my own dear Sue. **Mine, for ever.**''

By the way, one of the best illustrations of the way a man feels (or should feel) after the loss of a good wife occurs to me right here. It may sound a little slangy, but it seems to hit the right spot. A writer said he and the good wife had been working in harmony in all their undertakings to such an extent that they worked like a pair of shears. One blade, of course, is of no account without its mate; and many times of late I have had the feeling that for the rest of my life I should be something like a pair of shears with *one of the blades missing.*

Flying-machines Versus Horses, Trucks, Railways or Steamboats.

''Coming Events Cast Their Shadows Before.''

Right close to the office where I dictate is a hive of unusually energetic Italian bees. They are just now scampering into the hive, not only with great loads of honey but tremendous loads of golden-yellow pollen. The honey comes from the fruit bloom, but I have not yet decided where they get such big loads of pollen. Well, now, this thing has been going on, I might say, ever since the time of Adam; and yet so far as I know no one has as yet even suggested that the bees demonstrate to us that the cheapest way to move freight of any sort is by the ''AIR'' route. Here in Ohio, as I have told you before, we have a clay soil on which, sometimes, without good roads, a team can do but little more than pull an empty wagon, while we are spending millions in making good hard roads, only to find that these newly invented trucks that carry so many tons spoil our roads almost as fast as we can make them. Then we have to go to a still larger expense to lay tracks through hills and valleys for steam and electric cars. When Wilber Wright made his first trip out into the great free air and back again with his flying-machine, I told him that he had that day demonstrated the possibility of travel without macadamized roads or railways.

Now, will somebody get right to work and tell what proportion the honey and pollen bear to the weight of the bee that carries them? and has not the bee been demonstrating for ages past the superiority of the ''air route'' over anything else for moving things, whether it be human beings or carloads of grain to feed the starving, somewhere, on this big earth of ours?

One of my hobbies in childhood was windmills, to get hold of the wind and use it. A little later on it was electricity. Praise the Lord, it *did* get into my head that the two could be linked together, when I was near 80 years old; and it seems likely that the third hobby of mine—the possibilities of the outcome of bee culture—might link in flying also, with the work of the honeybee.

"Mend Your Own Tinware."

I think that the first time the name of A. I. Root appeared in print was about 65 years ago, when an advertisement appeared in the Scientific American, then just newly started. This advertisement was headed, "Mend Your Own Tinware"; and below you read, "Amos I. Root & Co., Medina, O.," would send the needed materials, with all directions, for 30 cents. If I remember correctly my apparatus for soldering gave at least general satisfaction. I do not remember any complaints, and I received quite a little money. As I look back, however, I feel pained to think of that "& Co." If I remember correctly, my good mother *did* remonstrate, but I told her that was the way "all business men did."

Well, in view of the above you may imagine my surprise to see a man on the Manatee County fairgrounds, in Florida, with an announcement on the board over his head, reading "Mend your own tinware." He had a little lamp very similar to the one I used years ago, and then he had sheets of different kinds of metal, and old rusty tin, zinc, galvanized iron, etc. He would punch holes in the various metals, then hold a piece over the flame of his little lamp and apply a little of the solder; and even rusty iron, tin, etc., were mended in a twinkling. He did not even scrape the rusty metal, and he did not apply any flux or acid. Let me remark right here that until quite recently we were told that aluminum could not be soldered; but this new alloy worked beautifully on a sheet of aluminum. The price of the "solderine" was 25 cents, or three outfits for 50 cents. The printed matter accompanying read as follows:

> ALUMINUM MENDING SOLDER.
>
> Guaranteed to mend any kind of metal without the aid of soldering iron, acids, rosin, scraping or cleaning. Mends radiators, copper boilers, galvanized iron tubs, brass, iron, tin or zinc, water pipes, gas pipes, lead pipes, bath fixtures, enamel, granite and aluminum ware.
>
> SOLDERINE.
>
> Directions for Using.
>
> Place the article you wish to mend over some kind of flame for about one-half minute (don't overheat); take a stick of solder like a lead pencil and rub a little in a circle around the hole until you cannot see the fire underneath. Remove and allow solder to become hard. Price 25 cents. United Specialty Co., Atlanta, Ga.

Just as soon as I saw how beautifully it did the work I wrote to the address above, but my letter was returned as "Uncalled for." Then I sent it back with orders for "special delivery"; but my letter came back again saying no such place could be found. Now, I hope this notice may be the means of enabling me to learn where I can buy more of this "solderine."

The metal is very much lighter than common solder, and melts much easier. But to show how it would stand the racket, the man would double it up and pound it with a hammer, and it acted exactly like metal soldered with a soldering-iron. What surprised me more was that it would stick almost as well to rusty *enameled* ware, even if it did not get hold of the metal at all. From what experience I have had in repairing utensils, not only at home but in working with metals in different factories, it seems to me the invention may be worth millions of dollars to the world. The piece of metal is about as large around as your little finger, and there is a hole in the center that probably contains some sort of acid or flux; and the best of all is that it *does the work*. When I find out where it can be purchased I will let you know. If any of the readers of Gleanings can give me any information in regard to the matter you may be sure I shall be very glad to get it. I put an advertisement in the Bradentown Herald to find out if the man left it for sale in that vicinity, but at present writing I have had no response.

"Give Us This Day Our Daily Bread"—Daily Bread for the Hungering World.

I am praying that the Lord will let me live long enough to see practically enough food provided in some way so that there may be no starving—at least in a wholesale way—on the face of this whole wide earth. I am not worried so very much about the men folks, especially the men folks who starve because they will not get to work and "look out for a rainy day;" but I am anxious about the mothers and babies—especially the mothers who bore the babies. These mothers, while they are doing the work of bearing the babies and keeping mankind on the face of the earth, should be abundantly fed, and fed with the best and most nourishing food. Well, in view of the above just imagine with what energy I said "Praise the Lord!" when I read the following in the Christian Herald:

> "Now comes confirmation of the welcome news that 'America has broken the back of the biggest famine in the world's history!' The seemingly impossible has been done, and done so thoroughly that a considerable proportion of the fund provided for Russian relief remains unexpended. Sixty-five cent of the famine areas are now sown with grain. Not only has the famine been checked, but American medical and hygienic skill has succeeded in allaying the widespread outbreak of typhus and other diseases in many localities. In a hospital in Moscow, equipped by American gifts, the deadly typhus germ has been discovered and isolated by a woman Russian scientnist, Dr. N. Kritch. This is regarded as one of the most important medical discoveries in a century."

"All hail," to the Russian *woman* doctor.

Classified Advertisements

Notices will be inserted in these classified columns for 50c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column, or we will not be responsible for errors. For special conditions on bee and queen advertising, please write us. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

Curd Walker, L. C. & Oscar Mayeux, Baughn Stone, I. J. Stringham, Weber Bros. Honey Co., Farmer Apiaries, O. E. Tulip, A. J. Pinard, T. W. Burleson, Abston Apiaries, H. L. Murry, W. H. Laws, J. D. Kroha, Chas. W. Zweily, E. D. Townsend, J. W. K. Shaw & Co., L. Parker, Jones & Stevenson, Jes Dalton, Dr. Chas. F. Briscoe, P. M. Williams, Jul Buegeler.

HONEY AND WAX FOR SALE.

FOR SALE—Clover, amber and buckwheat honey, 60-lb. cans and 5 and 10 lb. pails. C. J. Baldridge, Kendaia, N. Y.

FOR SALE—Choice saw palmetto honey, 390-lb. barrels, $35.00; 10-lb. cans, $1.25 f. o. b. Ward Lamkin, Arcadia, Fla.

FOR SALE—25 tons fine extracted white clover honey at 12c. Comb honey prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

FOR SALE—12,000 lbs. of choice white clover honey, well ripened, put up in new 5 and 10 lb. pails. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gal. barrels. Samples and price on request. A. I. Root Co., 23 Leonard St., New York City.

HONEY FOR SALE—In 60-lb. tins, water-white orange, 15c; white sage, 14c; extra L. A. sage, 12c; buckwheat, 10c, etc. Hoffman & Hauck, Woodhaven, N. Y.

FOR SALE—Clover honey, case, two 60-lb. cans, $14.00; case, six 10-lb. pails liquid honey, $9.00. Special prices on larger quantities. Sioux Honey Association, E. G. Brown, Pres.; C. S. Engle, Sec.-Treas., Sioux City, Morningside Sta., Iowa.

HONEY AND WAX WANTED

WANTED—Honey, section, bulk comb and extracted. Elton Warner, Asheville, N. C.

BEESWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

WANTED—Beeswax. We are paying 1c and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address so we can identify it immediately upon arrival, and make prompt remittance. The A. I. Root Co., Medina, Ohio.

FOR SALE.

HONEY LABELS—New design. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE—One Root two-frame Novice extractor. Price, $18.00. Box 172, Riverside, Ills.

YOU will make no mistake in ordering your comb foundation of E. S. Robinson, Mayville, N. Y.

FOR SALE—15 Danz. hives, complete, full frames and 15 supers. 1st Flat, 4712 Beacon St., Chicago, Ill.

FOR SALE — "SUPERIOR" FOUNDATION, "quality unexcelled." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

PORTER BEE-ESCAPES save honey, time and money. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

FOR SALE—Good second-hand 5-gal. cans, two to the case, per 25 cases, $15.00; per 100 cases, $50.00. A. I. Root Co., 230 W. Huron St., Chicago, Ill.

FOR SALE—Good second-hand 60-lb. cans, two cans to case, boxed, at 60c per case, f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., Cincinnati, Ohio.

FOR SALE—2 locations, about 500 colonies bees in good cypress and white pine 10-frame hives. Am moving to another part of the state. R. H. Fryer, Sumatra, Fla.

FOR SALE—Good, used once, second-hand 60-lb. honey cans, two cans to a case, boxed, at 35c per case, f. o. b. Milwaukee. Terms cash. Laabs Bros. Company, 2001 Walnut St., Milwaukee, Wis.

FOR SALE—25 eight-frame Root hives, slightly used, clean, two-story high, metal covers and with under covers, Danz. bottoms, newly painted, in one lot, $50.00. A rare bargain. Edwin G. Baldwin, 55 Division St., Ashtabula, O.

FOR SALE—50 cases (2 cans each) new 60-lb. tin cans. 125 supers for 4¼ x 1½ plain sections, nailed and painted, nearly new. 20 supers as above in original packages of five. All these goods cheap. Geo. Dodds, Cambridge, N. Y.

FOR SALE—15 one-story 10-frame Root hives, metal covers, combs drawn from wired foundation, 10 zinc excluders, 11 Miller feeders, excellent condition. Best offer above $60.00 takes the lot. O. Postpichal, 868 No. 25th St., Philadelphia, Pa.

FOR SALE—Village property on state road near Albany, N. Y., 6 acres, 2 fruited, 300 colonies of bees in ten-frame standard hives. Everything modern. Large honey house, concrete bee cellar (see Gleanings, September number). One of the finest yards and outfits in New York State. Two crops of clover and buckwheat. Auto truck, tractor, power extractor. Everything goes with few reserves. $3000 down, balance on B. & M. Woodward Apiaries, Clarksville, N. Y.

FOR SALE—200 colonies bees in standard 10-frame hives, metal covers, no disease, 700 supers, full depth with combs, 5 acres of irrigated land, all in annual and biennial sweet clover, except garden. Bees in fine shape. Garden all planted. Good house with full basement. Tanks and outfit complete. Crop goes with business. Cash price, $7500 for immediate sale. Gross receipt for 1921 were over $4500 from bees alone. This is the Home of the Famous Custer Battlefield Apiaries. S. F. Lawrence, Hardin, Mont.

WANTS AND EXCHANGE.

WANTED—Root Novice extractor, second-hand. A. W. Canney, No. Westchester, Conn.

ROYAL typewriter, $65.00. Will trade for honey, queens or offer. E. A. Harris, Albany, Ala.

WANTED—2-frame reversible extractor, 12 x 16 pockets, in good condition. Edw. Baur, Danbury, Conn.

FOR SALE OR TRADE—Oliver typewriter and auto knitter for Barnes saw, etc. Nic. Klein, Hudson, Iowa.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa, Council Bluffs, Iowa.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

FOR SALE OR TRADE FOR SUPPLIES—25-lb. box supers, sell for best offer, 8-frame supplies. A number of hives and frame supers complete. One foundation mill will sell for $35.00, 6-in. rolls. Must sell at earliest date. No disease. Hickory Shade Apiary, Ottervile, Mo.

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1922 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Ill.

SEEDS AND PLANTS.

''We will not guarantee the purity of any seed advertised nor any nursery stock, as nurserymen ordinarily will not do this themselves; but any seedman or nurseryman advertising in our columns will have given us excellent references in advance and our readers may consider this fact in their favor.''—From Our Guarantee and Advertising Conditions.

HUBAM- Michigan-grown, pure seed scarified 50c per lb., postpaid. Frank E. Davis, Muskegon Heights, Gen. Del., Mich.

SWEET CLOVER SEED—Biennial white, hulled and scarified, $10.00 per bushel of 60 lbs. Sacks included. O. H. Townsend, Otsego, R. D. No. 2, Mich.

HUBAM CLOVER SEED—Guaranteed purity, grown by ourselves; certificate of purity and germination furnished; 1 lb., $1.00; 5 lbs., $4.50; 25 lbs., $21.25. Delivered prices Write The Foster Honey Company, Boulder, Colo.

BEES AND QUEENS.

SEE Thagard's ad elsewhere back to pre-war day prices.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

FOR SALE—Full colonies Italian bees in Buckeye hives. Write, price moderate. A. C. E. Hamilton, 161 Archer Ave., Mt. Vernon, N. Y.

WHEN it's GOLDEN, it's PHELPS. C. W. Phelps & Son, Binghamton, N. Y.

$200 for one queen. See larger ad elsewhere. J. M. Cutts & Son, R. D. No. 1, Montgomery, Ala.

FOR SALE—Hardy Italian queens. Prices on request. The Brookside Apiaries, Bennington, Neb.

TRY ACHORD'S BEES and QUEENS. Price list by return mail. W. D. Achord, Fitzpatrick, Ala.

SPECIAL prices on queens and bees. See my ad page 416. Frank Bornhoffer, Mt. Washington, Ohio.

1500 NUCLEI for May and June. Simmons queens ready now. Fairmount Apiary, Livingston, N. Y.

FOR SALE—15 colonies of bees. No disease. Tim O'Donnell, Jr., 1147 S. Springfield Ave., Chicago, Ill.

BOOKING orders now for early queens and package bees. Write for prices. Sarasota Bee Co., Sarasota, Fla.

FOR SALE—10 Italian colonies, tested queens. 8-frame wired combs. No disease. J. Ford Sempers, Aikin, Maryland.

WHEN it's quality, service and satisfaction you want to try Pinard. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR SALE—Golden Italian queens. Tested queens, $2.50; untested, $1.25. J. F. Michael, Winchester, R. D. No. 1, Ind.

FOR SALE—Carload bees, nuclei, pound packages, full colonies. See our ad elsewhere. The Stover Apiaries, Mayhew, Miss.

PHELPS GOLDEN QUEENS will please you. Mated, $2.00; 6, $10.00; or $18.00 a doz. C. W. Phelps & Son, Binghamton, N. Y.

PRITCHARD QUEENS are the result of years of careful breeding and selection. See ad page 414. Arlie Pritchard, Medina, Ohio.

QUEENS—One untested queen $1.50; 6, $7.50; 12, $14.00; 50, $55.00; 100, $100. Tested queens, $2.50. Wells D. Rose, Sunnyside, Wash.

BUSINESS-FIRST queens offer you their illuminated descriptive handbook with prices, select untested, $1.50. M. F. Perry, Bradentown, Fla.

FOR SALE—Bright Italian queens, 1, $1.00; 12, $10.00; 100, $75.00. Safe arrival guaranteed. T. J. Talley, Greenville, R. D. No. 3, Ala.

FOR SALE—Three-banded Italian queens. Tested, after June 15, $2.00 each. J. D. Kroha, 87 North St., Danbury, Conn.

TWO-POUND package bees with untested Italian queen, $5.00; 3 lbs., $7.00. Safe delivery guaranteed. C. H. Cobb, Belleville, Ark.

PACKAGE BEES—$1.50 per pound. Untested Italian or Carniolan queens, $1.25 each. Circular free. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

FOR SALE—Golden Italian queens, untested, $1.15 each; 6 for $6.50; 12 or more, $1.00. Safe arrival guaranteed. Sam Hinshaw, Randleman, N. Car.

''SHE-SUITS-ME'' queens, line-bred Italians, $1.50 each; 10 to 24, $1.30 each. See back cover of January number. Allen Latham, Norwichtown, Conn.

TRY our northern-bred leather-colored Italian queens for European foul brood at $1.25 each; 6, $7.00; 12, $13.50. Charles Stewart, Johnstown, N. Y.

FOR SALE—Early package bees, nuclei and queens. We handle 1800 colonies. Shipping season March 1 to June 1. Loveitt Honey Co., Phoenix, Ariz.

STRONG four-frame nuclei of hybrid bees in June, $4.00. Four frames, Italians, or hybrids with untested queen, $5.00. B. F. Averill, Howardsville, Va.

MERRILL'S bright three-banded Italian queens will please you. Mated and laying, $1.00; 6, $5.25 or $10.00 a dozen. G. H. Merrill, R. D. No. 5, Greenville, S. Car.

FOR SALE—My Italian queens, now ready. Untested in June, each, $1.50; 6, $7.50. Safe arrival and satisfaction guaranteed. Circular. J. B. Hollopeter, Rockton, Pa.

ELTON WARNER'S QUALITY QUEENS—Progeny of his famous Porto Rican breeding stock. Write for illustrated price list. Elton Warner Apiaries, Asheville, N. C.

QUEENS—For summer and fall. Write for prices and guarantee, state quantity desired and when shipment wanted. I can fill your orders. J. L. St. Romain, Hamburg, La.

WE ARE booking orders now for spring delivery for the famous "Colorado Queens." Send your order early so as to be sure to get your queens. C. I. Goodrich, Wheatridge, Colo.

TRY my Caucasian or Italian 3-frame nuclei at $6.00 each with tested queen. Tested queens, $1.50; untested, $1.25, of either kind. No disease. Peter Schaffhouser, Havelock, N. Car.

FOR SALE—Three-band Italian queens, select untested, $1.00 each; $9.00 per doz. 2-lb. package with queen, $5.00. Satisfaction guaranteed W. T. Perdue & Sons, Fort Deposit, Ala.

BEES BY THE POUND — Also QUEENS Booking orders now. FREE circulars, giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas. E. B. Ault, Prop.

DEPENDABLE QUEENS—Golden or three banded, after June 1: 1, $1.50; 6, $8.00; 12, $15 Safe arrival and satisfaction guaranteed. Send for circular. Ross B. Scott, La Grange, Ind.

FOR SALE—Golden Italian queens ready May 1. 1 queen $1.25; 6, $6.50; 12, $12.00; 100 $85.00. Virgins, 50c each. Write for prices of nuclei. W. W. Talley, Greenville, R. D. No. 4. Ala.

FOR SALE—My 1922 golden queens, the big yellow kind, none better. Satisfaction guaranteed. Price $1.00 each, or $10.00 per doz. After June 15, 90c each, or $9.00 per doz. E. F. Day, Honoraville, Ala.

HIGH-GRADE ITALIAN QUEENS a specialty Order early. Prompt shipment. Laying, $1.50: tested, $2.50. Day-old, with introduction guaranteed in the U. S., 75c. James McKee, Riverside, Calif.

FOR SALE—Leather colored Italian queens tested, until June 1, $2.50, after $2.00. Untested, $1.25; 12, $13.00. ROOT'S GOODS ROOT'S PRICES. A. W. Yates, 15 Chapman St., Hartford, Conn.

GOLDEN QUEENS that produce large beautiful bees, solid yellow to tip, very gentle and prolific. Untested, $1.25 each; select tested, $3.00 each; breeders, tested, $5.00. Dr. White Bee Co., Sandia, Texas.

FOR SALE—Three-banded Italian queens, 1, $1.00; 6, $5.00; 12, $9.00; 100, $70.00, after May 20. We ship only the best. Safe arrival and satisfaction guaranteed. W. C. Smith & Co., Calhoun, Ala.

FOR SALE—Golden Italian queens, untested, $1.15 each; 6, $6.50; 12 or more, $1.00 each; select untested, $1.60; 6 or more, $1.50 each. Safe arrival. Hazel V. Bonkemeyer, R. D. No. 2, Randleman, N. C.

CAN furnish promptly, 2-frame nuclei with queen, $3.50; 3-frame nuclei with queen, $4.50; 4-frame nuclei with queen, $5.50. Rosedale Apiaries, J. B. Marshall and H. P. LeBlanc, Props., R. F. D. No. 2, Alexandria, La.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, $1.00 each; $10.00 per dozen; $75 per 100. Pure mating, safe arrival and satisfaction guaranteed.

TWO-POUND PACKAGES with queens, $4.75 each; 10 or more, $4.50 each; 25 or more, $4.25 each; discounts on pound packages after May 25. No disease, safe arrival and satisfaction guaranteed. J. J. Scott, Crowville, La.

WILLOW-DELL Italian bees and queens at lower prices for June. None better. Best to winter. Untested queen, $1.00; 6 for $5.00. Nuclei with queen, 2-fr., $3.75; 3-fr., $5.00. Jumbo, $4.50 and $5.75. H. S. Ostrander, Mellenville, N. Y.

FOR SALE—Unsurpassed Italian queens, ready June 1. Untested, 1, $1.25; 6, $7.00; 12, $12.50; 50, $50.00; 100, $95.00. Tested, 1, $2.00; 6 $11.00. My queens are actually laying before they are sent out. J. D. Harrah, Freewater, Oregon.

COLORADO HEADQUARTERS for QUEENS—Northern-bred leather-colored three-band Italians. Safe arrival guaranteed. Booking orders now for June 1st delivery. Send for circular and price list. Loveland Honey & Mercantile Co., Loveland, Colo.

THREE pounds of bees, shipped on a Hoffman frame of brood and honey, with an untested Italian queen for $6.00. No disease, satisfaction and safe arrival guaranteed. 25% books your order for April and May shipments. E. J. Beridon, Jr., Mansura, La.

ORDERS booked now for spring delivery, 3-frame nucleus and queen, $6.50; select tested, $7.50; Dr. Miller's strain. No pound packages. Low express rates and quick transit north. 10% with order. S. G. Crocker, Jr., Roland Park, Baltimore, Md.

FOR SALE—DEPENDABLE GOLDEN ITALIAN QUEENS. Add beauty to your bee quality. Virgins, 60c; 5 for $2.50; untested, $1.00; 6 for $5.00; select untested, $1.50! 6 for $6.50; tested, $2.50; 5 for $10.00; selected, $3.00; breeders, $5.00. Safe arrival and quality guaranteed. S. H. Hailey, Pinson, Tenn.

FOR SALE—Golden Italian queens, untested, $1.15; 6, $6.50; 12 or more, $1.00 each; tested, $2.00 each; select tested, $3.00 each; after July 1, untested, $1.00; 6 for $5.40; 12 or more, 80c each; tested, $1.50 each; select tested, $2.50 each No disease of any kind. Bees very gentle and good honey-gatherers. D. T. Gaster, Randleman, R. D. No. 2, N. C.

CALIFORNIA QUEENS—100% perfect, large vigorous Italians, guaranteed layers. They are making a hit as proven by repeated orders and letters of appreciation. Am building a name and reputation. Try at least one. You will surely want more then. Price reduced. Select untested, 1, $1.00; 6, $5.00; 25, 90c each. H. Peterman, R. F. D., Lathrop, Calif.

LAST fall I had selected and tested six queens. Will use them as breeders this season in my queen yard. Their surplus honey capacity is from 216 lbs. to 288 lbs. each. I guarantee that every queen bought of me in 1922 is to be the daughter of one of these queens. Bees are three-banded. Mated, in June, $1.25 each; 6, $7.00; 12, $13.50; 25 or more, $1.00 each. After July 1, $1.00 each straight. Julius Victor, Martinsville, N. Y.

FOR SALE—Pinard's quality of Root's strain of bees and queens. Virgins, 50c. Untested queens, $1.25 each. Larger lots write. Circular free. After July 1, 10% discount. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

BRIGHT ITALIAN QUEENS, $1.00 each, 10% less in dozen lots. Pure mating, safe arrival and reasonable satisfaction guaranteed in U. S. and Canada. Write us for prices on package bees. We have them in season. Graydon Bros., Rt. 4, Greenville, Ala.

HEAD your colonies with Williams' Italian queens of quality and get more pleasure and profit from your bees. They produce bees that are gentle, hardy and hustling. Descriptive circular free. Select untested, 75c each. P. M. Williams, Ft. Deposit, Ala.

MY GOLDEN ITALIAN QUEENS possess the qualities which make beekeeping profitable. Mated. $1.00 each, $10.00 per doz. Virgins, 50c each or $4.25 per doz. Safe arrival and satisfaction guaranteed. Your orders solicited. Crenshaw County Apiary (Melvin Talley, Prop.), Rutledge, Ala.

FOR SALE—Italian queens. Prices for untested in June, $1.50 each; 6, $8.25; 12, $16.00; tested, $2.50 each. From July 1 to Oct. 1, untested, $1.25 each; 6, $7.00; 12, $13.50; tested, $2.00 each. Safe arrival and satisfaction guaranteed. Ready to ship June 1 to June 10. R. B. Grout, Jamaica, Vt.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Our aim is not quantity but quality. Our first consideration is to give perfect satisfaction. Untested, $1.50 each; 6 for $8.00; tested, $2.00 each; select tested, $3.00 each. Prof. W. A. Matheny, Ohio University, Athens, Ohio.

FOR SALE—Golden Italian queens and bees, untested. 1 queen, $1.00; 1 dozen, $10.00; 100, $75.00. 2-lb. package with queen, $5.00; 1-lb. package with queen, $3.00; 12 or more, 5% off. 2-frame nucleus with queen, $5.00; 15 or more, 5% off. Safe arrival and satisfaction guaranteed. J. F. Rogers, Greenville, R. D. No. 3, Ala.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production hardiness, prolificness, gentleness and perfect markings. Price, May and June: $1.50 each, 12 or more, $1.25 each. Send for circular. J. H. Haughey Co., Berrien Springs, Mich.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualtiies you want They are GREAT HONEY-GATHERERS. BEAUTIFUL and GENTLE. Virgins, $1.00; mated, $2.00; 6 for $10.00 or $18.00 per doz.; tested, $5.00. Breeders, $10.00 to $20. Safe arrival guaranteed only in the U. S and Canada. C. W. Phelps & Son, Binghamton, N. Y.

I EXPECT to be ready to start shipping 3-lb. packages of bees with 1 frame, 1 untested queen at $6.00; 2-frame nuclei with untested queen, $4.50, about April 15. Young tested queen, 50c extra, or $1.50 each. I think I was the second to ship packages of bees from this state and know how to serve customers. F. M. Morgan, Hamburg, La.

FOR MAY DELIVERY—One vigorous Italian queen, one frame emerging brood, one pound bees, price complete, $5.00. Additional pound bees, $1.00. Additional frame of brood, $1.00. Banat mixed queens and bees 5% discount. After May 25 10% discount on all. Safe arrival guaranteed. Send 10% to book order. T. W. Livingston, Norman Park, Ga.

BEES—Engage your queens from any reliable dealer, and we will furnish you the bees. One-lb. pkg., $1.35 each; 2-lb. pkg., $2.50 each; 3-lb. pkg., $3.00 each. No orders accepted for less than 5 lbs. 10% will book your order. Bees will move exact date ordered. 1500 colonies to draw from. Our apiaries are favorably located for early breeding, hence all orders filled with young, vigorous bees. Never had a case of disease in our apiaries. We are experienced shippers. We give a full guarantee safe arrival and satisfaction. Brazos Valley Apiaries, H. E. Graham, Prop., Gause, Texas.

BALANCE of season we will furnish a 2-lb. package of our three-banded hustlers with a select untested queen for $4.75; 25 or more, $4.50 each. Select untested queens from our best breeders, $1.00 each; $10.00 per doz. Tested, $1.50 each; $15.00 per doz. Caney Valley Apiaries, J. D. Yancey, Mgr., Bay City, Texas.

FOR SALE—200 colonies of the celebrated Moore strain of leather-colored Italians. They are in Langstroth hives, combs all built on wired foundation. All have tested queens less than one year old. No disease among or near them. Price in lots of one to 50, $12.00 each; 50 to 100, $11.50 each; 100 or more, $11.00 per colony. Elmer Hutchinson & Son, Salt Lake City, Mich.

FOR SALE—250 colonies of bees, all in 10-frame hives, practically all new equipment, a splendid orange and sage location with an eight-room house, modern, plenty of land and in one of the best sections of Southern California. Will sell everything, property furnished ready to move into. Can give possession at once. Honey flow should last until middle of August. Address C. A. Wurth, R. D. No. 1, Box 167, Riverside, Calif.

CONNECTICUT queens. Highest grade 3-banded Italians ready June 1. Select untested $1.25 each; 6, $6.50; 12, $12.00; 50, $47.50; 100, $90. Two lbs. bees with queen, $5.00; 3 lbs. with queen, $7.00. Two-frame nuclei with queen, $5.50; 3-frame with queen, $7.50. Select virgin queens (not culls), 50c each, $45.00 per 100. No disease and satisfaction guaranteed. A. E. Crandall, Berlin, Conn.

MAY delivery, one, two and three pound packages, $3.00, $4.00 and $5.00. Nuclei, $3.00, $4.25 and $5.50, with select untested Italian queens. Special orders solicited. Select untested three-band queens, April and May, $1.25, 6 or more, $1.00 each. 20% books order. State health certificate. Safe arrival and satisfaction guaranteed. Address Apalachicola, Fla., office. Tupelo Honey Co., Columbia, Ala.

LARGE, HARDY, PROLIFIC QUEENS—Three-band Italians and Goldens. Pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. After June 1 prices as follows: Untested, $1.25 each; 6 for $7.00; select untested, $1.50 each; 6 for $8.50; select tested, $3.00 each. Special prices on larger quantities. Queens clipped free on request. Health certificate with each shipment. Buckeye Queens, Zoarville, Ohio.

FOR SALE—50 colonies of bees in 2-story, 10-frame, metal-top hives, wired foundation. No disease. Strong colonies of goldens and three-banders with young queens. With above equipment is included 75 comb-honey supers, 2000 sections, 25 lbs. foundation, 50 bee-escapes and other equipment. Blue vine location furnished free if desired. $400 takes all above for quick sale. S. H. Burton, Washington, Ind.

I'M offering 100 two-frame nuclei for June delivery, with young untested three-banded Italian queens, for $375.00. Each package contains one and one-half pounds of bees, with fine frames drawn from full sheets foundation. 1 to 10 nuclei, $3.90 each; 10 or more, $3.85 each. Can ship from receipt of orders. Guarantee safe delivery and health certificate. C. A. Mayeux, Hamburg, La.

I HAVE nuclei and more nuclei for June delivery. 1000 2 and 3 frame nuclei with selected untested three-banded queens. These nuclei will go with a large force of young bees and extra fine frames drawn from full sheets of foundation. Note our prices on 10 or more: 1 nucleus with queen, 2-frame, $4.00; 10 nuclei, with queens, 2-frame,

$35.00; 1 nucleus, with queen, 3-frame, $4.75; 10 nuclei, with queen, 3-frame, $41.25. We guarantee to ship on receipt of order with health certificate and safe delivery. GUARANTEE. The Home of Good Queens, Oscar Mayeux, Hamburg, La.

QUEENS AND NUCLEI FOR SALE—Three-banded Italians, one queen, $1.10; per dozen, $10.00; 2-fr. nucleus with queen, $4.50; 3-fr. nucleus and queen, $6.00. Will book orders for two months for August and September delivery if wanted at a cut price of 50c on nucleus and 10c on queens. No disease. Orders filled at once. 50 swarms for sale delivered in September and October, at $10.00 each. Thanks in advance. Hickory Shade Apiary, Otterville, Mo.

FOR SALE—Three-banded queens and bees. Dr. Miller and my own stock. Three-frame nuclei and queen, $5.50; 1 lb. bees and queen, $2.75; 2 lbs. and queen, $5.00; 3 lbs. and queen, $6.25. All good empties returned at my charges. Queens, $1.25 each; 6 for $7.00; 12 for $13. 24 and over at $1.00 each. Reared in the Hubam black belt sweet clover section, Scotts Sta., Ala., by Curd Walker, queen-breeder.

I. F. MILLER'S STRAIN ITALIAN QUEEN BEES—Northern-bred for business; from my best SELECT BREEDERS; gentle, roll honey in, hardy, winter well, not inclindeo to swarm, three-banded. 28 years breeding experience. Satisfaction guaranteed. Safe arrival in U. S. and Canada. 1 untested, $1.50; 6, $8.00; 12, $14.00; 1 select untested, $1.75; 6, $9.00; 12, $17.00. 1 lb. bees, $3.00; 2 lbs., $5.00; 3 lbs., $7.00. I. F. Miller, Brookville, Pa., 183 Valley.

FOR SALE—Two-frame nuclei Italian bees. with tested Italian queen, delivery May 1 by express f. o. b. here, $7.50 each. Terms, $2.00 down, balance ten days before shipping date. These queens were reared last August from very choice Italian stock, and big producers. Order early as we have set a limit on number of nuclei we will sell this season. First come, first served. Largest apiary in Westchester County, Spahn Bros., Pleasantville, Westchester Co., N. Y.

FOR SALE—250 to 350 colonies of fine Italian bees, on good straight L. combs, with a full equipment of supplies for extracted-honey production. Also 47 acres land in Harrison County, Iowa, near town; has about 20 acres fine natural basswood grove. Has good improvements, especially for beekeeping. Probably as good an equipment as there is in the state. This is a good paying business, with outyards already established, everything complete. Can give long time on part of the price, but would require $8000 or $9000 to swing it. Any one having that much capital to invest in a dandy country home and a paying business, will find it by addressing E. S. Miles & Son, Dunlap, Iowa.

GOOD queens advertise themselves. It takes expensive advertising to sell poor queens, and if you don't believe it try it. We believed in former years we had the best three-banded queens obtainable. We still believe it. Our customers also tell us the same. Try a few. We have dropped the price in reach of all this year. We will have a few virgins for 50c when we have a surplus of them. We can furnish either from imported or Americanized mothers. Untested, $1.00; selected, $1.25; tested, $2.00; selected, $2.50. F. M. Russell, Roxbury, Ohio.

QUEENS AND PACKAGE BEES—Bright, three-banded Italian. We are now booking orders for the season of 1922. Shipments of queens and package bees this year commenced on March 15. All queens are mated in standard full-sized nuclei. We operate four thousand standard full-sized nuclei. Capacity and output of queen yards this season five thousand queens per month. We own operate and run for extracted honey in the states of California and Nevada twelve thousand colonies of bees. All of our breeders are selected queens whose colonies led these twelve thousand colonies of bees last season. Better selection of breeders cannot be equaled or had anywhere. We have the capacity and output of queens and package bees to make shipments promptly as and when promised. We guarantee safe arrival of queens and package bees. Prices—Mated, untested queens: 1, $1.00; 6, $5.50; 12, $9.60; 13 to 99, 75c each; 100 or more, 70c each. Package Bees—Write for special price. Terms, 10 per cent deposit on booking order; balance at time of shipment. See our large advertisement in this magazine. Western Bee Farms Corporation (Principal); Western Honey Corporation and Western Citrus Honey Corporation (Associated Corporations), Claus Spreckels Building, No. 703 Market Street, San Francisco, California.

SPICER'S three-band Italian queens will be ready to mail about May 20. If you are interested in improving your stock and getting larger returns from your bees, head your colonies with these queens. Untested, $1.25; 6, $7.00; 12, $13.50. Tested, $2.50 each. Robt. B. Spicer, Wharton, N. J.

MISCELLANEOUS.

FOR SALE—Soy beans and whipporwill pease, $2.00 per bushel. W. L. Lyons, Decherd, Tenn.

WANTED—Good reversible extractor, exchange fine 25-20 Winchester Repeater, or will buy. Fred Fisher, 3 Elmendorf St., Albany, N. Y.

FOR SALE—Used honey cans in cases, good condition. S. T. Fish & Co., 163 W. S. Water St., Chicago, Ill.

TYPEWRITERS—All makes slightly used; $20 up. Easy payments. Free trial. Express prepaid. Guaranteed two years. Payne Company, Rosedale, Kansas.

FOR SALE—Fine coon dog "pups," 3 months old. Price, $10.00 to $15.00 each, f. o. b. express. Address. Old Coon Hunter O. H. Townsend, Otsego, R. D. No. 2, Mich.

MEDICINAL roots and herbs are very profitable to grow. We especially recommend growing Golden Seal, which with good care will yield as high as $10,000 per acre for each crop. It takes several years to mature but will average $1000 a year. Special Crops, a monthly paper, tells how. Sample copy, 10c. $1.00 per year. Address Special Crops Pub. Co., Box "G," Skaneateles, N. Y.

HELP WANTED.

WANTED—Man with some experience to work in our apiaries. State age, experience and wages. Answer fully in first letter. The Rocky Mountain Bee Co., Box 1319, Billings, Mont.

Special Notices by A. I. Root

Hubam in Florida.

On page 253 of our issue for April I said, "We are going to sow it on our potato ground as fast as the potatoes are dug." By the way, years ago I made up my mind that I would stop telling what I was going to do, but would try to confine my remarks to what I had actually done. As fast as our potatoes were dug I put the ground in nice trim and began sowing Hubam. But we had a long and severe drouth, with almost no rain at all, and the ground became fearfully hot in the middle of almost every day. Scarcely a seed came up. Sometimes after a little shower a few seeds would start up; but the hot sun killed them. During comparatively cool weather in November, December and January there is no trouble about getting it to grow; and, by the way, when I left my Florida home on the 26th of April some of my Hubam was over 9 feet tall. It stood the drouth—that is, after the long tap root had got away down—quite well for a time; but eventually the drouth cut short the amount of both bloom and foliage.

BEES - QUEENS

FROM GEORGIA

JUNE PRICES THREE-BANDED ITALIANS

QUEENS—Untested, 90c. Tested, $1.25. BEES—1 pound, $1.50; 2 pounds, $3.00; 3 pounds, $4.50. NUCLEI—1-frame, $2.25; 2-frame, $3.00; 3-frame, $4.50. 10% discount on lots 10 or more. Your satisfaction guaranteed. Disease resisting, and from yards certified free from disease. Send us your list of supply needs.

MICHIGAN HONEY PRODUCERS EXCHANGE. INC.

5495 Grand River Avenue, Detroit, Mich.

3-BAND ITALIANS

Our queen-rearing department is under the supervision of H. D. Murry, well known to the trade as a breeder of GOOD QUEENS. Reared from stock that put up 250 pounds surplus honey. Prompt and satisfactory service.

Untested, $1.25; 6, $7.00; 12, $13.50; 25 or more, $1.00. Tested, $2.00.

MURRY & BROWN
MATHIS, TEXAS.

QUEENS

Nordan's Three-Banded Italian Queens and Bees (Three-Banded Only)

BEEKEEPERS: If you have one colony or five thousand I want you to give my superior strain of three-banded Italians a trial. I am fixing the price right so you can. I am not a new man come out; I have been in business almost all of my life for honey production and improving my strain. I have selected and bred my strain from the finest mothers in my yards which were selected for all of the good qualities. For over a quarter of a century I spared neither labor nor money in developing my strain until now I can put queens and bees on the market which I know are surpassed by none and I guarantee that money cannot buy any better in the U. S. A. When you introduce my queens, beekeepers, you can feel assured you have a bee that cannot be surpassed by any in U. S. A., which is backed by over a quarter of century improving and selecting from the finest mothers and mated to drones that are selected.

NOTICE—My strain are guaranteed immune to Bee Paralysis. I have found the foundation of Bee Paralysis, which is in the queens, and now after years of selecting and testing I guarantee my strain resistant to it. Bee Paralysis is prevalent over the South. I will gladly replace any bees I ship that Bee Paralysis breaks out in.

QUALITY AND SATISFACTION.—Each and every queen I send out, if it be one or five thousand, is guaranteed to give absolute satisfaction; otherwise advise me and I will gladly send more to take their places. You don't run any risk. A record of over a quarter of a century of fair and honest dealings. You get your money's worth as nearly as possible plus a very small profit, and my price is fixed to a very small profit.

All queens select; if they do not prove up pleasing to the eye, they are not shipped. I do not price a select untested and ship an untested. I give the greatest care possible to produce the finest queens possible.

PRICES ON QUEENS AND PACKAGES.

	1	6	12	100
Select Untested	$0.85	$4.80	$9.00	$64.00
Tested	1.00	5.70	10.80	85.00

Packages Full Weight.

1-pound package with queen	1 to 12, $2.35 each; 12 or more, $2.30
2-pound package with queen	1 to 12, $3.85 each; 12 or more, $3.80

I can make shipment when you want them of either queens or packages.
I appreciate your business large or small.
Reference: Alabama Bank and Trust Co., Montgomery, Alabama.

M. S. NORDAN - MATHEWS, ALABAMA

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OHIO AND WEST VIRGINIA BEEKEEPERS.

We are most favorably located for serving Central, Southern and Eastern Ohio, and also West Virginia. No matter where you are, full stocks, best shipping facilities and prompt attention will insure satisfaction. Free catalog.

MOORE & PEIRCE
Zanesville, Ohio—''Beedom's Capital.''

Michigan Bred Three-Band Italian Queens, Untested.

July Delivery.

1 to 9, $1.40 ea.; 10 to 100, $1.30 ea.

August Delivery.

1 to 9, $1.25 ea.; 10 to 100, $1.15 ea.
Select Tested after June 20, $2.00 ea.
Virgins after June 1st, 1 to 9, 60c ea.; 10 up, 55c ea.

If you must have untested during June send elsewhere, as old customers have ordered my June outfit of untested.

D. A. DAVIS, Birmingham, Michigan.

PATENTS---TRADEMARKS

I offer prompt, personal and expert professional service. 10 years' experience. Write for terms. **LESTER SARGENT, Patent Attorney, 524 Tenth St., N. W., Washington, D. C.**

World's Best Roofing at Factory Prices

"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofing, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Save money—get better quality and lasting satisfaction.

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MAY QUEENS PRICED RIGHT

UNTESTED, $1.20 EACH. 12 OR MORE, $1.00. SELECTED UNTESTED, $1.50. TESTED, $2.00. Satisfaction guaranteed. No Disease.

D. W. HOWELL

SHELLMAN, GEORGIA. BOX A3.

BEES—ITALIAN BEES—BEES

Full colonies with Italian queen at $15; 2 for $25. 3-frame nucleus with Italian queen at $6.50. 3-lb. package with Italian queen at $6.50. No disease. Safe arrival and satisfaction guaranteed.

VAN'S HONEY FARMS
Van Wyngarden Bros., Props. Hebron, Indiana.

QUEENS -- QUEENS

LARGE, leather-colored 3-banded Italian queens; 10-years selection, bred for honey-gathering; gentle, hardy and long-lived. Price: Select untested. 1, $1.25; 6, $6.50; 12, $12. After July 1: 1. $1; 6, $5; tested, $1.50 each. Write for price on large orders. Free booklet, ''How to Transfer, Get Honey and Increase.''

J. M. GINGERICH, KALONA, IOWA.

INDIANOLA APIARY offers Italian Bees and Queens for following prices: Untested Queens, $1.00 each; Tested Queens, $1.50 each. Bees, per lb., $2.00. Nucleus, $2.00 per frame. No disease. Bees inspected.

J. W. SHERMAN,
Valdosta, Georgia.

ROOT QUALITY BEES AND BEEKEEPERS' SUPPLIES.

Bees in the hive, in packages, and nuclei, three-banded leather-colored Italian queens. Let a beekeeper of long standing serve you in your requirements for 1922. Catalog on request.

O. G. RAWSON,
3208 Forest Place, East St. Louis, Illinois.

Goldens the Best

14 years in business should give you best queens possible. Untested, $1, or 6 for $5; in lots of 25 or more, 75c each. Virgins, 40c each, or 3 for $1. Satisfaction and promptness my motto.

R. O. COX, Box 25, RUTLEDGE, ALABAMA.

''Marugg's Special''

IMPORTED MOWING BLADES

And Sickles with DANGEL cutting edge ''THE MARUGG SPECIAL'' are praised by thousands of users in the United States. Used by leading apiarists. Write for particulars to THE MARUGG COMPANY, Dept. B, TRACY CITY, TENN.

Queens of Quality

From Tennessee

3-BAND ITALIANS ONLY.

Untested, $1.00 each; six for $5.00. $9.00 per dozen. Now shipping by return mail. Circular free.

J. I. BANKS, Dowelltown, Tenn.

NEWMAN'S QUEENS

Originated from the world famous Moore strain of Italians. Absolutely first quality and fully guaranteed, no disease. Satisfaction and safe arrival.

Untested: 1, $1.25; 6, $6.00; 12, $11.00.
Sel. Unt.: 1, $1.75; 6, $8.00; 12, $15.00.

Circular free.

A. H. NEWMAN, Queen-Breeder.
Morgan, Kentucky.

THREE BANDED
ITALIAN QUEENS

Reared from the best breeders obtainable in strong ten-frame colonies. Mated in four-frame nuclei. Delivery after April 10th at the following prices:

Untested—1, $1.00; 5, $4.50; 10 to 50, 80c. Large lots, 75c each.
Tested—1, $2.00; 10, $17.

PACKAGE BEES WITH QUEENS.
1-lb. package, $3.50; 10 or more, $3.25 ea.
2-lb. package, $5.25; 10 or more, $5.00 ea.

Situated to promptly supply Western and Northwestern beekeepers. Safe arrival and satisfaction guaranteed.

THE ORANGE APIARIES, Porterville, Calif.
O. F. Darnell, Prop. M. S. Fortune, Breeder.

—QUEENS OF—
MOORE'S STRAIN

OF ITALIANS PRODUCE WORKERS

That fill the supers quick
With honey nice and thick.

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc. Untested queens $1.50; 6, $8; 12, $15.00. Select untested, $2; 6, $10.00; 12, $19.00. Safe arrival and satisfaction guaranteed. Circular free.

J. P. MOORE, Queen Breeder,
Route 1, Morgan, Kentucky.

NEW ENGLAND

Beekeepers will find a complete line of the best supplies here. Send in your order early and be ready for the harvest. Remember this is the shipping center of New England. Write for new catalog.

H. H. JEPSON
182 Friend Street. BOSTON 14, MASS.

"Best" Hand Lantern

A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. **Agents wanted. Big Profits. Write for Catalog.**

THE BEST LIGHT CO.
306 E. 5th St., Canton, O.

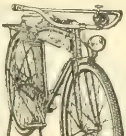
PATENTS Practice in Patent Office and Court.
Pat. Counsel of The A. I. Root Co.
CHAS. J. WILLIAMSON,
McLachlan Bldg., Washington, D. C.

Cheapest Way to Go to work or school and recreation is on a **Ranger** bicycle. Choice of **44 styles** and sizes. *30 Days' Free Trial.* Express prepaid.

12 Months to Pay if desired. Saved time and carfare easily meets the small payments.

Tires Parts, equipment—at half usual prices. *Send no money.* Write for our remarkable factory prices and marvelous terms.

Mead Cycle Company Dept. L 153 Chicago **Write us today for free catalog**



Free Crochet Needle

FREE CROCHET NEEDLE. Just imported from England: has unique handle; can't slip. Yours free for a wonderful Filet and Venetian Crochet Book—80 new, exclusive designs with directions. Only 25c a copy—edition limited, only one copy to a family. **The Boyd Import & Mfg. Co., Dept. J, Perry-Payne Bldg., Cleveland, O.**

MASON BEE SUPPLY COMPANY
MECHANIC FALLS, MAINE

From 1897 to 1922 the Northeastern Branch of The A. I. Root Company

PROMPT AND EFFICIENT SERVICE

BECAUSE—Only Root's Goods are sold.
It is a business with us—not a side line.
Eight mails daily. Two lines of railway.
If you have not received 1922 catalog send name at once.

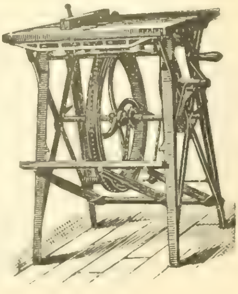
BARNES' HAND & FOOT POWER MACHINERY

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial

Send for illustrated catalog and prices.

W. F. & JOHN BARNES CO.
545 Ruby Street
ROCKFORD, ILLINOIS.



QUEENS

OUR OLD RELIABLE THREE-BANDED ITALIANS ARE HONEY GETTERS.

They are gentle, prolific, and very resistant to foul brood. Orders booked for one-fourth cash. Safe arrival guaranteed. Circular free.

PRICES

	1	6	12
Untested	$1.00	$5.50	$10.00
Select Untested	1.25	6.50	12.50
Tested	2.25	12.50	24.00
Select Tested	$3.00 each		

See our Dec. and Jan. Advertisement.

JOHN G. MILLER

723 C Street, Corpus Christi, Texas.

Let us tell you about the California Gold Medal Queens The Queens with the Pedigree.

Our hardy, immune, prolific strain of 3-banded leather-colored Italians. Developed from the world's best strains by careful selection and tested under California conditions for five years, with excellent results. My specialty will be breeding stock and every queen produced will receive my personal care and inspection. Now receiving orders for the season of 1922, which will be filled in the order of their receipt. Write for catalog and prices.

THE COLEMAN APIARIES

GEO. A. COLEMAN, Prop.,
2649 Russell St., Berkeley, California.

Q-U-E-E-N-S

Select three-banded Italians that will please. Our bees are unexcelled for gentleness, disease-resisting qualities and honey production. Pure mating and satisfaction guaranteed.

	1	6	12
Untested	$1.25	$ 7.00	$13.00
Select Untested	1.50	8.00	14.00
Tested	2.50	13.00	25.00
Select Tested	3.00	16.00	30.00
Select Tested Breeders			$5.00
Day-old queens			40c each

Queens ready to ship by return mail. Queens' wings clipped free of charge. Write for descriptive circular and prices per hundred.

HARDIN S. FOSTER
COLUMBIA - - - - TENNESSEE

MOTT'S
NORTHERN-BRED ITALIAN QUEENS

All are selected queens this season.

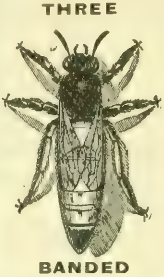
Select Untested, $1.50 each, $15.00 per doz. Sel. Guaranteed pure mated, or replace free, $1.75 each, $18.00 per doz. Sel. Tested, $2.50. Virgins (not mated), 75c each, $8.00 per doz. After June 1st, 10% off to the Canadian trade to help out on exchange.

Plans "How to Introduce Queens" and "Increase," 25c.

E. E. MOTT
GLENWOOD, MICHIGAN.

I Pay Transportation Charges on Package Bees

1-lb. pkg., including young 3-banded queen $4.50
2-lb. pkg., including young 3-banded queen 6.00
3-lb. pkg., including young 3-banded queen 7.50



25 cents per package less for twelve or more packages. Delivered to your address via parcel post. In comparing my prices with others, take in consideration you have no express charges to pay. Parcel post shipments go through quicker.

PRICES OF QUEENS AFTER MAY 15:

1 Select Untested....$1.00
5 Select Untested.... 4.75
10 Select Untested.... 8.50
25 Select Untested, 75c each

Orders filled by return mail. Pure mating and satisfaction guaranteed. It is left with customer to say what is satisfaction. No disease.

JASPER KNIGHT, Hayneville, Ala.

QUIGLEY QUALITY

Italian Queens and Bees are produced by double grafting, producing queens of superior quality and long-lived bees, filling your big hives with bees. Hustlers, hardy, wintering on summer stands. No disease; 36 years in this location. Purity and satisfaction guaranteed.

Untested, June $1.50; 6, $7.50; 12, $14.00.
Tested, June, $3.00. Fine Breeders, $10.00.
3-frame Nuclei, tested queen, $7.50.

Send for circular.

E. F. QUIGLEY & SON
UNIONVILLE, MISSOURI.

Quality Bees

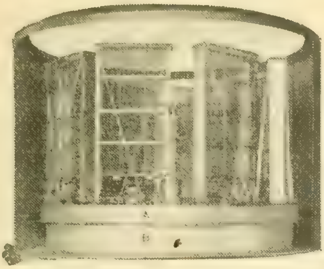
From the apiaries of E. R. King, formerly Deputy State Inspector of Apiaries in Ohio, later in charge of Apiculture at Cornell University.

	JUNE	JULY
Full colony in 1-story 10-fr. hive with tested queen	$14.50	$12.00
Two-frame nucleus with untested queen	5.50	4.00
2-lb. package of bees with untest-queen	4.75	4.00
Untested Italian queen	1.25	1.00

First shipments can be made about May 15. 20 per cent payable with order, remainder at shipment. Price reductions for quantity orders.

KING'S APIARIES,
McARTHUR, OHIO.

Lewis Extractors



Lewis-Markle Power Honey Extractor.
Tank cut away.

Made in 4 and 8 frame sizes. Accommodates 2 sizes of baskets, power operation, machinery underneath, no vibration, tank and baskets instantly removable for cleaning. A commercial success. Circular free. Address:

G. B. LEWIS COMPANY

Watertown, Wisconsin, U. S. A.

There's a Distributor Near You.

Established 1885.
Write us for catalog.

BEEKEEPERS' SUPPLIES

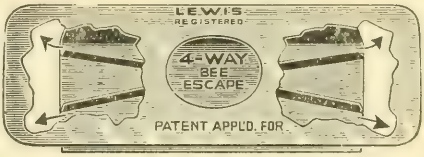
ALWAYS ON TOP

The Kind You Want and the Kind That Bees Need.

We have a good assortment in stock of bee supplies that are mostly needed in every apiary. The A. I. Root Co.'s brand. Let us hear from you. Information given to all inquiries. Beeswax wanted for supplies or cash.

John Nebel & Son Supply Co.
High Hill, Montgomery Co., Mo.

LEWIS 4-WAY BEE ESCAPES



Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal. Price each 18c prepaid. Made by

G. B. LEWIS COMPANY, Watertown, Wis., U. S. A.
For Sale by all Dealers.

HONEY

We are in excellent position to serve beekeepers who do not produce enough Honey to supply their trade. We have a big stock of fine table honey of various grades always on hand.
In 60-lb. Tins Crystallized—Water White Orange, 15c; White Sage, 14c; Extra L. A. Sage, 12c; Buckwheat, 10c.

GLASS AND TIN HONEY CONTAINERS.

2½-pound cans, 2 dozen reshipping cases............$1.45 case; crates of 100, $4.50
5-lb. pails (with handles), 1 dozen reshipping cases....$1.35 case; crates of 100, $7.00
10-lb. pails (with handles), ½ dozen reshipping cases..$1.10 case; crates of 50, $5.25
60-lb. tins, 2 per case..................................New, $1.20 case; used, 25c

White Flint Glass, With Gold Lacquered Wax Lined Caps.
8-oz. honey capacity..$1.50 per carton of 3 doz.
16-oz. honey capacity.$1.40 per carton of 2 doz.
Qt. 3-lb. honey capacity.$1 per carton of 1 doz.

HOFFMAN & HAUCK, Inc.
WOODHAVEN, NEW YORK.

CENTRALLY LOCATED TO SERVE NEW ENGLAND BEEKEEPERS.

Root QUALITY BEE SUPPLIES

ORDERS FILLED PROMPTLY.

—

CATALOG ON REQUEST.

F. COOMBS & SONS, BRATTLEBORO, VERMONT

QUEENS

Pure Three-Band Italians Only.
Select Breeding.

Best methods and equipment as approved by up-to-date authorities. You can get none better at any price. Our free folder will tell you what others say about them. A trial order will convince you that they have the qualities desired.

PRICES AND TERMS.

Untested, 1 to 12, $1.10 each; 13 to 25, $1.00 each; 26 to 100, 90c each. Select untested, add 25c per queen. Tested, $1.75. Select Tested, $2.00. Breeders, $7.50 and $10.00 each on a one-frame nucleus.

For delivery after June 1st, deduct 10% from above. Send 20% to book, and balance before shipment is wanted. Pure mating, safe arrival and complete satisfaction guaranteed. No more package bees or nuclei this season.

JENSEN'S APIARIES
R. F. D. No. 3, CRAWFORD, MISS.

That Pritchard Queens
AND
Pritchard Service

made a hit last season is proven by the many letters of appreciation and repeated orders received. This year we are BETTER PREPARED WITH a LARGER OUTFIT AND REDUCED PRICE.

THREE-BANDED ITALIANS.

Untested	$1.25 each;	6 for $7.00
Select Untested	$1.50 each;	6 for $8.50
Select Tested		each $3.00

Queens clipped free on request. We are booking orders now. Send yours at once and we will do our best to ship on date you desire. Acknowledgment and directions for introducing sent on receipt of order. Safe arrival and satisfaction guaranteed. Untested ready about June 1.

ARLIE PRITCHARD
R. F. D. No. 3. MEDINA, OHIO

FOR SALE
PACKAGE BEES

All bees are shipped on a standard Root frame, emerging bees with honey.

June 1st to 15th.

2 pound package	$2.75
3 pound package	3.50
4 pound package	4.25

and untested queen with each package bees.

Safe delivery guaranteed. Free from any contagious bee disease. Certificate will accompany each shipment.

A. J. LEMOINE
MOREAUVILLE, LA.

Strong Nuclei
FOR
Little Money

Prepaid to your Town or Station Any Month of the Year.

From stock originally bred by Henry Alley and E. L. Pratt more prominently known to the beekeepers of 15 years ago as SWARTHMORE.

This stock was bred and selected for upwards of 20 years by the above well-known breeders. Since 1909 I have continued this work of selection. Have 600 colonies to draw from.

1-fr. nuclei with untested queen	$6.00
2-fr. nuclei with untested queen	6.75
3-fr. nuclei with untested queen	7.25

DELIVERED FREE in 1st, 2nd, 3rd, 4th and 5th parcel post zone from N. Y. City. Additional charge of 10% beyond that zone.

GUARANTEED SAFE DELIVERY.
NO FOUL BROOD IN PORTO RICO.

TROPICAL APIARIES, Aibonito, Porto Rico
PENN G. SNYDER.

We Are the HUB for

HUBAM

Guaranteed, certified, Annual Sweet Clover.

All new crop, grown on our own farms and all from the first fifty seeds from that original plant at Ames.

We are shipping to all parts of the world now. HUBAM is being planted somewhere every day for bee pasture, hay, pasture, or for green manure to plow in.

The seed is hulled and scarified, with a purity of 99.8% and grows 97%. Price now is $2.00 per pound.

With each and every order for Hubam we will include FREE a can of Nitragin pure culture bacteria which will insure proper growth of the Hubam plant.

Our seed is pure. You buy from an old established firm with a reputation to maintain when you buy from

THE HENRY FIELD SEED COMPANY
SHENANDOAH, IOWA.

Bee Supplies

Send us your orders for honey containers NOW.

Special Prices on

TIN AND GLASS HONEY CONTAINERS

2½ lb. Cans, per 100	$4.25
5 -lb. Pails, per 100	7.00
10 -lb. Pails, per 100	10.50
60 -lb. Sq. Cans, per case of 2	1.25
2½-lb. Cans, per case of 24	1.25
5 -lb. Pails, per case of 12	1.10
10 -lb. Pails, per case of 6	.90

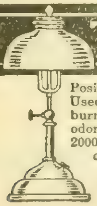
GLASS JARS.

8-oz. honey capacity, case of 24	$1.15
16-oz. honey capacity, case of 24	1.35
32-oz. honey capacity, case of 12	1.20

Write for prices on large quantities, stating number and sizes wanted.

Send us a list of your requirements of BEE SUPPLIES, and we will quote you prices that are right.

A. H. RUSCH & SON CO.,
REEDSVILLE, WIS.



The "BEST" LIGHT

Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles. 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog. AGENTS WANTED EVERYWHERE.

THE BEST LIGHT CO.
306 **E. 5th St., Canton, O.**

KITSELMAN FENCE

Get It From the Factory Direct

"I saved 20 cents a rod" writes Martin Wagner, St. Anthony, Ind. Think of it! **YOU, too, CAN SAVE.** Write today for our big 100-page Catalog showing **Lowest Prices** on Farm, Poultry, Lawn Fence, Posts, Gates. It's Free.

KITSELMAN BROS. Dept. 21 **MUNCIE, IND.**

DON'T DELAY---GET OUR PRICES

WE SAVE YOU MONEY

"Falcon"

SUPPLIES --- QUEENS --- FOUNDATION

W. T. FALCONER MFG. COMPANY
FALCONER (Near Jamestown) NEW YORK
"Where the best beehives come from."

Northern-bred Italian Queens Are Hardy Queens

We are in position to furnish you good, hardy, thrifty queens, the result of ten years' selective breeding, the best breeders from over seven hundred colonies. Each breeder has a honey record. Each year new stock has been secured, and so we have built up a strain of bees which, I believe, cannot be beaten in the Northwest. Orders will be handled promptly. On large orders secure mailing date. Fifteen per cent down, balance two weeks before shipment. Shipments begin June 1.

1 Untested Queen	$ 1.50
6 Untested Queens	7.50
12 Untested Queens	14.00
50 Untested Queens	55.00
100 Untested Queens	100.00
Tested Queens, each	2.50

WELLS D. ROSE
SUNNYSIDE, WASHINGTON.

3-Banded Queens

If you have tried the rest
Now try the BEST.

Our customers are amazed at the good queens we send them for the money. One customer from Iowa writes, "Queen I got from you last year stands at the head of the list and I have queens from nine different breeders in five different states." Another from Nebraska: "I certainly like the gentleness of your bees. Please book me for a dozen." One from Illinois: "The queens I got of you last year are certainly doing fine, etc." We rear our queens to get results and a trial order will convince you as it did hundreds of our other customers. We are able to furnish only a thousand of these A-No. 1 queens a month. Better not delay in placing your order.

Every queen guaranteed to be purely mated, to reach you in perfect condition and to give what you think is satisfaction. Never have had any contagious or infectious diseases in our apiaries.

Untested	**$1.25;**	**12, $13.50;**	**25, $1.00 ea.**
Sel. Untest.	**1.50;**	**12, 16.20;**	**25, 1.25 ea.**
Sel. Tested	**2.50;**	**12, 27.00;**	**25, 2.00 ea.**

Circular and complete price list free.

HERMAN McCONNELL,
ROBINSON - - - ILLINOIS

High Quality Queens

By Return Mail

Untested Queens—1, $1.00; 6, $5.50; 12, $10.00; 25, $20.00. Select Untested —1, $1.20; 6, $6.50; 12, $12.00; 25, $23.50. Select Tested—$2.00 each.

NUCLEI AND PACKAGE BEES.

2-frame nucleus, $3.25; 3-frame nucleus, $4.50. 1-lb. package, $2.00; 2-lb. package, $3.25; 3-lb. package, $4.50. Add price of queen wanted with nucleus or package. Safe delivery and fullest satisfaction guaranteed. Health certificate furnished with each shipment.

FRANK BORNHOFFER
MT. WASHINGTON, OHIO.

Selected Queens

of the Highest Quality

1000 Full Colonies *1000 Nuclei*
Queens by Return Mail

Three-banded Queens Our Specialty

Our queens produce bees that are wonderful honey gatherers, gentle and most resistant to all diseases. We guarantee every queen we ship to give entire satisfaction. Wings we clip free of charge on request. Safe arrival and prompt delivery are also fully guaranteed. There may be other queens just as good, but we believe you will find few better. To know them, try them.

Hayneville Apiary Co.
Hayneville, Alabama.

A SUPERIOR QUALITY AT LESS COST

Supplies

(MADE BY THE DIAMOND MATCH CO.)

A SUPERIOR QUALITY AT LESS COST

Reasons why our prices are reasonable: Our supplies are brought to us in cargo lots by steamer from California through the Panama Canal. The resulting saving in freight cost is passed on to our customers.

One-Story Complete Dovetailed Hive

With metal telescope cover, inner cover, reversible bottom, Hoffman frames, nails, rabbets.

Standard Size.

Crate of five, K. D., 8-frame	$12.65
Crate of five, K. D., 10-frame	13.25

Jumbo Size.

Crate of five, K. D., 10-frame	14.25

Hive-Bodies

With Hoffman frames, nails, rabbets.

Standard size, crate of 5, K. D., 8-fr.	$5.20
Standard size, crate of 5, K. D., 10-fr.	5.85
Jumbo size, crate of 5, K. D., 10-fr.	6.85

Hoffman Frames

Standard size	100, $5.20;	500, $25.00
Shallow	100, 4.30;	500, 21.00
Jumbo	100, 5.80;	500, 28.00

Diamond Brand Foundation

Medium	5 lbs., 68c lb.;	50 lbs., 65c lb.
Thin Super	5 lbs., 75c lb.;	50 lbs., 72c lb.

Aluminum Honeycombs

Standard Langstroth	$5.00 box of 10
Shallow Extracting	4.00 box of 10
Jumbo	6.00 box of 10

HOFFMAN & HAUCK, INC.
WOODHAVEN, NEW YORK

Northwestern Headquarters for Italian Queens

The queen is the life of the colony. You cannot afford to keep poor queens or a poor strain of bees. I have been in the bee business for more than twenty years and have made every effort to improve the honey-gathering qualities of my bees by purchase of breeders and by selective breeding. I believe that my bees are unsurpassed by any. When you buy Untested Queens from me you are getting select untested queens. I will begin mailing queens about June 1.

Prices June 1 to October 1:	1	6	12	50	100
Untested Italian Queen......	$1.25	$7.00	$12.50	$50.00	$95.00
Tested Italian Queen.......	2.00	11.00			

I have no pound packages or nuclei for sale.

J. D. HARRAH, Route 1, FREEWATER, OREGON

Queens *Bees*

Forehand's 3-Bands

One Queen for $1.00

They Satisfy. Why?

Because they are guaranteed to be as good as money can buy. Not a cheap queen but a queen of the best at a cheap price. Every queen guaranteed to reach destination in first-class condition, to be purely mated and give perfect satisfaction or money back. Orders filled by return mail.

Untested: 1 to 25, $1.00 each; 25 to 50, 90c; 50 to 100, 80c each. Select Untested, 1 to 25, $1.25 each. Tested, $2.00 each, or 12 for $20.00. One lb. pure Italian bees with queen, $3.00. Two lbs. pure Italian bees with queen, $5.50 Ten of more 2-lb. packages, $5.00 each.

N. FOREHAND, RAMER, ALABAMA.

QUEENS
Bright Three-Banded
Italian.

QUEENS
Bright Three-Banded
Italian.

Package Bees

We are now booking orders for queens and package bees for the season of 1922.

Shipments of queens and package bees this year commenced on March 15, 1922.

All queens are mated in standard full-sized three-frame nuclei.

We are operating four thousand standard full-sized three-frame nuclei.

Capacity and output of queen yards this season is five thousand queens per month.

We own, operate and run for extracted honey in the states of California and Nevada twelve thousand colonies of bees. All of our breeders are selected queens whose colonies led those twelve thousand colonies of bees last season. Better selection of breeders cannot be equaled or had anywhere.

We have the capacity and output of queens and package bees to make shipments promptly as and when promised.

All queens shipped by us in six-hole mailing cages. No small-sized mailing cages used.

We guarantee safe arrival of queens and package bees. Any queens or package bees arriving dead at destination will be replaced without charge.

References by permission: The A. I. Root Company of California, No. 52 Main Street, San Francisco, California, and No. 1824 E. Fifteenth Street, Los Angeles, California; The Diamond Match Company, Apiary Department, Chico, California; The Western Honey Bee, No. 121 Temple Street, Los Angeles, California; Bees and Honey, Hutchinson Building, Oakland, California; The Beekeepers' Review, Lansing, Michigan.

Banking references upon request.

We respectfully solicit your patronage.

Prices and Terms

MATED UNTESTED QUEENS

1	$1.00
6	5.50
12	9.60
13 to 99, each	.75
100 or more, ea.	.70

PACKAGE BEES.

Write for special Price.

TERMS.

10% deposit on booking order.
Balance at time of shipment.

WESTERN BEE FARMS CORPORATION

(PRINCIPAL)

Westen Honey Corporation :: Western Citrus Honey Corporation
(ASSOCIATED CORPORATIONS)

General Offices: Claus Spreckels Building, No. 703 Market Street, San Francisco, California.

The Quality of Root's Goods is such that their continuous use enables one to build up complete equipment for any number of colonies, every unit being interchangeable with every other unit, and each additional order increasing the value and usefulness of all.

⁂

We suggest that you anticipate your needs as far as possible during the very busy months of June and July. We are making every effort to give good service.

⁂

M. H. HUNT & SON
510 North Cedar Street, Lansing, Michigan

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Whether you have only a few colonies or five hundred, we believe you will like them, and they will prove a worthy addition to your yard. They are a bright hustling three-banded strain bred primarily for honey production, but also gentleness and color. We have spared neither labor nor expense to make them the very best.

Price of Queens to June 15th.

Untested each	$1.25;	ten or more	$1.15;	25 or more	$1.00
Select Untested	1.35;	ten or more	1.25;	25 or more	1.15
Tested each	2.00;	ten or more	1.75;		

Price of Queens After June 15th.

Untested each	$1.00;	five or more	$0.90;	ten or more	$0.80
Select Untested	1.10;	five or more	1.00;	;ten or more	.90
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Safe arrival and satisfaction guaranteed.

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Novice Two-frame Extractor.

For 53 years we have been solving the extractor problems of beekeepers, and today we are abreast of every latest idea in extracting. It was in 1869 that A. I. Root built the first practical honey-extractor in America. Year after year as the methods applied to beekeeping have progressed, we have constantly improved our honey-extractors in order that they might always meet the requirements of the most exacting conditions. The result has been that during the last 10 years alone more than 15,000 of our extractors have been sold to beekeepers.

ROOT EXTRACTORS FOR EVERYBODY.

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The Root two-frame Reversible Extractor is the best seller because it is right in design, excellent in quality of workmanship and material, easily capable of extracting more than 1000 pounds in 10 hours, and very reasonably priced. A great many of these have given good service for more than 25 years.

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Buckeye Power Extractor.

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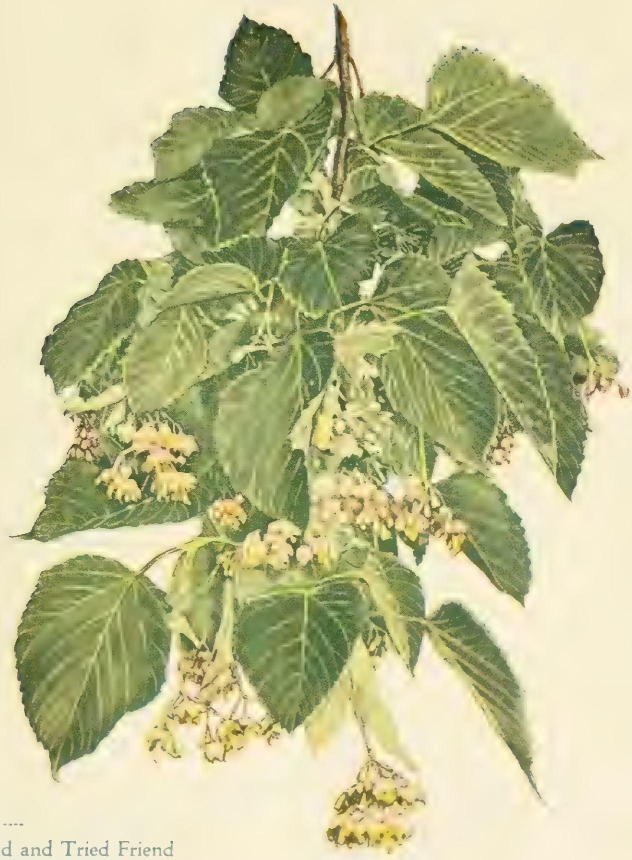

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VOLUME L JULY, 1922 NUMBER 7

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Mr. Hershiser is one of our state inspectors and has been a beekeeper almost all his life; also inventor of the Hershiser wax-press. Does he know good bees when he sees them? Does a duck swim? I guarantee pure mating, safe arrival, free from disease and health certificate furnished with each shipment.

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Toledo, Ohio

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in exchange for supplies.
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(These prices guaranteed to August 1, 1922, only.)

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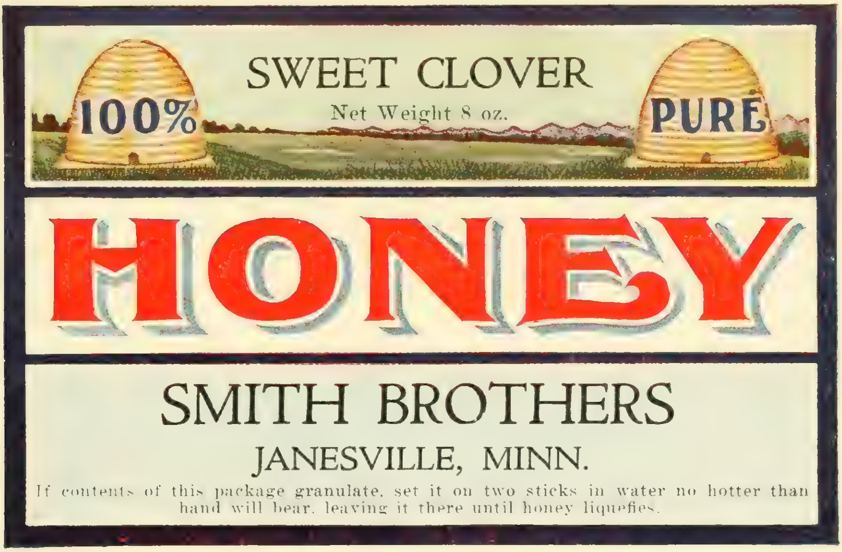

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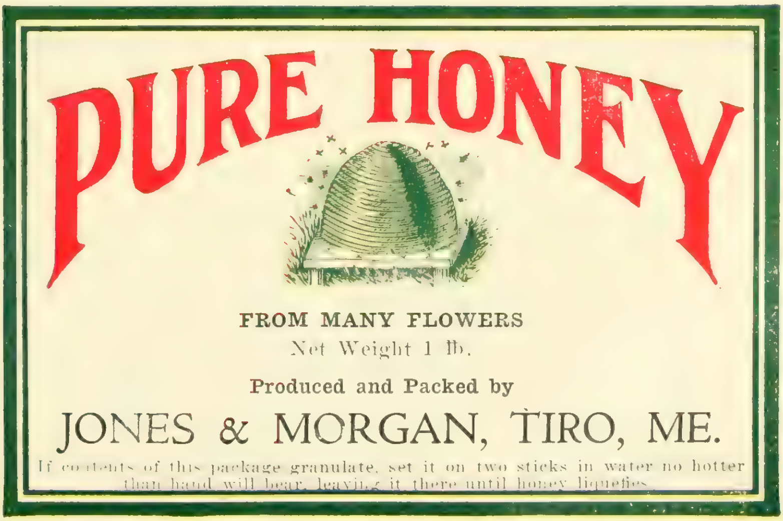

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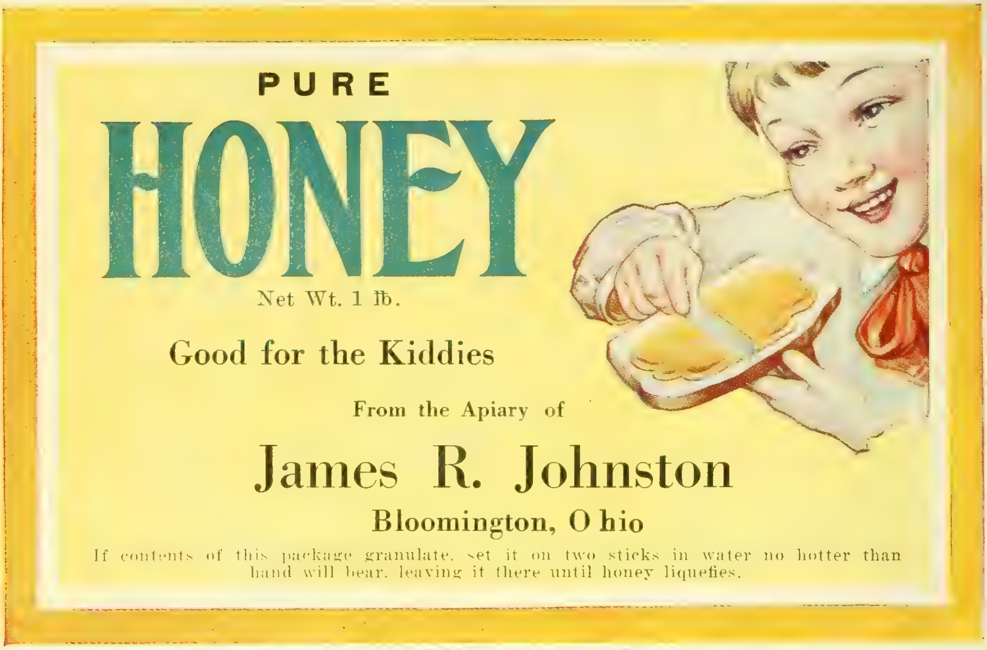

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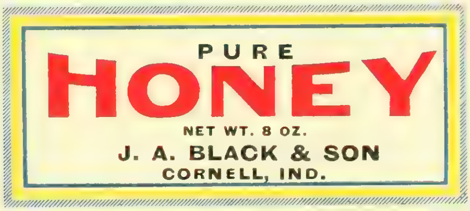

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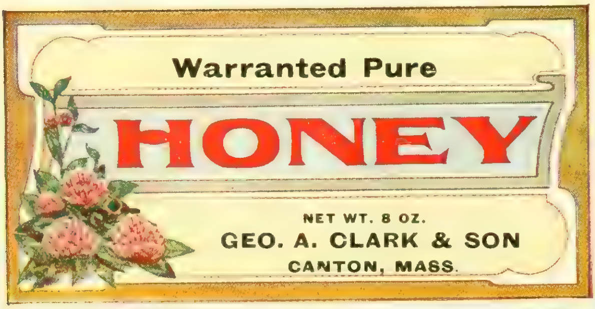

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Entered as second class mail matter at the Postoffice at Medina, Ohio. Published monthly.
Space occupied by reading matter in this issue, 58.4 per cent; advertising, 41.6 per cent.

THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

Editorial Staff

Geo. S. Demuth and E. R. Root	A. I. Root	H. H. Root	H. G. Rowe
Editors	Editor Home Dept.	Assistant Editor	M'n'g Editor

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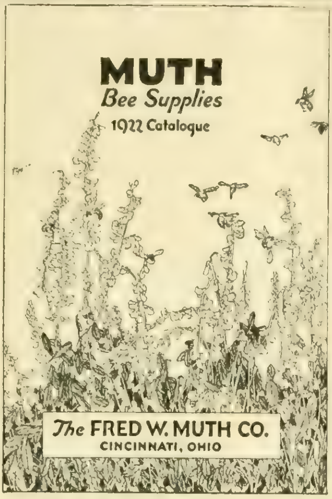

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Send a list of your requirements to us.

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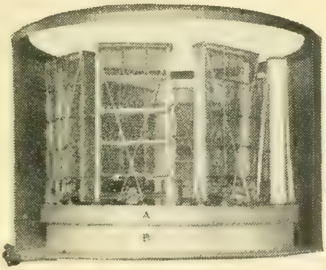

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HONEY MARKETS

U. S. GOVERNMENT MARKET REPORTS.

Information from Producing Areas (First half of June).

CALIFORNIA POINTS. — Beekeepers report that the orange flow is over, but that bees are still gathering sage honey. The yield of orange honey is reported as fair to good; that of sage and buckwheat as good. Both orange and sage new crop are said to be of fine quality. Few sales are reported in carlots, f. o. b. usual terms, from California points, of extracted water white orange blossom and sage at 9½-10c, fancy high as 10½c per lb. Light amber alfalfa, no sales reported, but shippers quoting 6-6½c per lb.

INTERMOUNTAIN REGION. — Throughout much of the territory the continued good weather has given the bees considerable strength, and the swarming period is now on, about three weeks later than usual. Honey plants generally growing very fast, and in spite of the late season it is thought that the bloom will be scarcely a week later than normal. A good crop is expected from sweet clover. In Arizona some loss reported due to early breeding followed by cold spells with little honey on which to keep going. Mesquite flow is said to be almost a failure in Salt River Valley as result of recent hot weather, but some honey being taken from alfalfa. No carlot sales reported, but it is understood that white sweet clover and alfalfa can be bought in large lots in 5-gal. cans at 8¾c per lb. Small lot sales in 5-gal. cans and smaller containers reported at 10-10½c per lb. Some beekeepers selling to near-by dealers at 8½c per lb. in 60-lb. cans.

TEXAS POINTS.—Continued rains proving disastrous to honey yield and to colony increase. Horsemint now reported in full bloom, but bees apparently not storing surplus from it. Many beekeepers report little surplus from any source; others say their spring crop has been nearly normal. Due to lack of nectar and pollen, as a result of wet weather, many colonies reported dwindling. Sunshine needed badly if cotton and mesquite flows are to produce much surplus. Queen-cells reported in June by several beekeepers—unusually late in the season for Texas. Light amber extracted reported selling in 60-lb. cans at 8-8½c per lb., and mild white 6/10s at 9½c, 12/5s at 10½c per lb. Chunk honey, 6/10s reported in small lots at $9.00 per case for white and $7.80 per case for light amber. Quotations received of 10c per lb. for chunk honey in 60-lb. cans.

EAST CENTRAL AND NORTH CENTRAL STATES.—White clover, alsike and raspberry are in bloom and the main flow has commenced. Bees storing rapidly, and with favorable weather conditions a heavy crop should be taken off. Heavy swarming is reported from several sections. Very large sales of bee supplies reported. Many beekeepers throughout the entire clover belt apparently returning to comb-honey production as demand for sections is reported the heaviest in years. Many new beekeepers reported in Michigan. Extracted honey largely exhausted. Some large lots white clover in 60-lb. cans offered at 11½c per lb., f. o. b. shipping point, but few sales reported.

PLAINS AREA.—Colonies said to be in good condition. Flow is now coming on from alsike and white clover, and with sufficient showers prospects look good for a normal crop. Swarming reported by some beekeepers to be worst in years.

NORTHEASTERN STATES.—Bees said to be doing unusually well. Alsike and white clover are now in bloom, and, with abundance of rain, a normal crop of honey should be secured. Some surplus being stored. Basswood is reported budding fairly well. Some beekeepers report heavy for white clover and 8c per lb. for buckwheat in 60-lb. cans. Beekeepers reported selling extracted white clover to near-by dealers at 10c per lb.

WEST INDIES.—Shipments from Cuba have fallen off somewhat but are still heavy. Sales made recently in barrels to Antwerp at 57c per gal., including cost and freight; f. o. b. price quoted at 4c per lb.

SOUTHEASTERN STATES.—In Florida the season is over, resulting in a small crop. Some beekeepers have not taken off any surplus at all. Orange and saw palmetto in small tins reported selling around 12-12½c per lb. Alabama reports that the first 10 days of the clover flow were ruined by cloudy and rainy weather, but prospects are now good for a normal crop. Protracted and heavy rains in Georgia have injured cotton and other honey plants in some parts of the state; in others, the fall honey plants are said to be in good condition. Spring flow practically over. Little demand reported for large shipments. Some sales reported in 34-gal. barrels of fancy at 10c per lb.; No. 1, 8c; No. 2, 6c, and some extra fancy at 12½c per lb. Light amber reported selling in small containers at 10-12½c per lb. Comb, fancy, white, has recently sold at $4.50 per case and No. 1 light amber at $4.00 per case. Bright yellow beeswax listed at 25c per lb.

Telegraphic Reports from Important Markets. Market Reports are for June 14.

BOSTON.—Boat receipts equivalent to 1 car Porto Rico arrived since last report. Comb honey in light supply, good stock being almost cleaned up. Little demand for comb, moderate demand for extracted. Prices practically unchanged. Comb: Sales to retailers, New York, 24-section cases best, $6.50-7.00; poorer, granulated, $4.50-5.00. Extracted: Sales to confectioners and bottlers, Cuban and Porto Rican, amber, 80-85c per gal.; California, white sage, 15-16c per lb.

CHICAGO.—Since last report 1 car Colorado and 600 lbs. Ohio arrived. Extracted: Market dull and about steady with supplies rapidly cleaning up under slightly improved demand. Sales to bottlers and bakers, Utah and Arizona, alfalfa and mixed mountain flowers light amber, 8½-9c, mostly 9c; Nevada, white alfalfa and sweet clover, 10-11c; Iowa and Wisconsin, white clover, 11-12c; mostly 12c. Comb: Supplies remain liberal. Market weak. Sales to retailers, 24-section cases Wisconsin, white clover No. 1 fancy, few, $5.00-5.50; Colorado, Arizona and Montana, white alfalfa and sweet clover No. 1, $4.00-4.50. Beeswax: Receipts light. Market about steady. Sales to wholesale druggists and laundry supply houses. Colorado and California, light 30-32c; dark, 26-28c. Central American, light, 26-28c; Chilean, light, 28-30c.

NEW YORK.—Domestic and foreign receipts limited. Supplies rather limited. Demand and movement light, market dull, few sales. Extracted: Spot sales to jobbers, wholesalers, confectioners, bakers and bottlers, domestic, per lb., California, light amber alfalfa, 8-8½c, light amber sage, 9-10c; white sage, 11-12c; white orange blossom, 11½-12½c. Intermountain Region, white sweet clover, 10½-11c; New York, white clover, 10-11c; buckwheat, 7-7½c; South American and West Indian, refined, per gal., best 68-70c; poorer, 60-65c. Beeswax: Foreign receipts light. Very good demand, strong market. Spot sales to wholesalers, manufacturers and drug trade, South American and Chilean, light best 32-35c, poorer, 29-30c. Brazilian, fair color, 24-26c; African, dark, 24-26c; Cuban, light, 25-27c; fair color, 20-23c.

PHILADELPHIA.—Extracted: Supplies generally light. Demand is very slow and the market is reported as about steady. Very few sales in small lots reported to retailers, Cuban amber and Porto Rico light amber, various flavors around 72c per gal. Beeswax: Supplies light. While there is very little demand the market is a trifle stronger. Sales to manufacturers, African, good quality, medium dark 26-27c per lb.

ST. LOUIS.—No carlot receipts of comb or extracted since last report. Demand is very light, practically no movement, market very dull. Comb: Sales to wholesalers and jobbers in 24-section cases, Colorado and Idaho, white sweet clover and alfalfa No. 1 medium, $5.50-6.00. Extracted: Sales to wholesalers and jobbers, per lb., in 5-gal. cans, California, light amber, alfalfa, 8-10c; mostly 8½-9½c. Beeswax: No receipts reported during past two weeks. Not much change in market. Ungraded average country run wax quoted to jobbers nominally at 26c per lb.

H. C. TAYLOR,
Chief of Bureau of Markets.

Drouth and hot winds have stopped the honey flow in this section for the season. Former estimate of yield is too high. One hundred pounds will be a fair average, unless red clover yields later. Basswood matured prematurely by the hot dry winds.

Peru, Ind. Geo. S. Demuth.

From Producers' Associations.

There is no activity worth mentioning in comb honey, and extracted honey in large quantities is entirely closed out in this section. Prospects for a crop are fairly good.

The Colorado Honey Producers' Assn.,
Denver, Colo. F. Rauchfuss, Sec.

The Opinions of Honey Producers Themselves as Reported to Gleanings in Bee Culture.

Early in June we sent to actual honey producers the following questions:

1. How does the honey flow thus far compare with normal in your locality? Give answer in per cent.
2. What is your estimate of the 1922 crop as compared with a five-year average? Give answer in per cent.
3. What price are producers in your locality expecting to receive for the new crop at their station if sold in large lots? (a) For extracted honey? (b) for comb honey?
4. What prices are expected when honey is sold to retailers in small lots? (a) Comb honey, fancy and No. 1 per case? (b) extracted honey in 5-lb. pails or other retail packages?
5. Is there any of last year's crop still in the hands of producers in your locality?
6. Has the swarming been worse than usual in your locality this season?

The answers as returned by our honey and bee reporters are as follows:

States.	Reported by:	Honey Flow.	Honey Crop.	In large lots. Ext.	In large lots. Comb.	To Retailers. Comb.	To Retailers. Ext.	1921 Crop Uns'd.	Swarming Worse.
Alabama	J. C. Dickman	100	120	$.09	$6.00	$6.50	$0.75		Yes
Alabama	W. D. Achord	100	100	.10			.75		No
Alabama	J M .Cutts	40	100	.08		4.80		0	No
Arkansas	J. Johnson	100	100		4.80			0	Yes
California	M. A. Sayler	100	100	.09	3.00	8.60	.75	0	No
Colorado	J. A. Green	85	65			4.40	.65	1	No
Colorado	B. W. Hopper	100	100	.10	4.00	4.50	.75	0	No
Connecticut	A. Latham	20						0	No
Connecticut	A W. Yates	125	100					0	Yes
Florida	C. C. Cook	160	160	.10	3.60	5.00	.75	5	
Florida	H. Hewitt	175	150	.12			.80	0	No
Florida	W. Lamkin	125	140	.08			.60	0	No
Georgia	J. J. Wilder	120	105	.09	3.35		.75	5	No
Idaho	J. E. Miller	55		.15	4.80	3.60	.60	0	No
Illinois	C. F. Bender	110	100		4.80	5.50		0	No
Illinois	A. L. Kildow	100	150			4.50	1.00	0	Yes
Indiana	T. C. Johnson	100	150			6.00	1.00	0	Yes
Indiana	E. S. Miller	100				4.80	.80	20	No
Indiana	Jay Smith	25	75					0	Yes
Iowa	E. G. Brown	10	25	.10		5.00	.80	2	No
Iowa	F. Coverdale	100	100	.10	4.80	5.50	.70	0	Yes
Iowa	W. S. Pangburn	100	90				.75		
Kansas	J. A. Nininger	100	120			6.00	.75	0	Yes
Kentucky	P. C. Ward	100	100					1	Yes
Louisiana	E. C. Davis	100	125					5	No
Maryland	S. G. Crocker, Jr	90	100						No
Maine	O. B. Griffin		100		6.00	7.00		0	
Massachusetts	O. M. Smith	100	100					0	No
Michigan	I. D. Bartlett	125	100	.10		4.50	.75	0	No
Michigan	F. Markham	100	100		5.00	5.50	.80	0	No
Missouri	J. H. Fisbeck	120	120					0	Yes
Missouri	J. W. Romberger	100	100			5.80	.80	0	Yes
Montana	R. A. Bray	85	95	.10	5.25	6.00	.75	0	No
Nevada	L. D. A. Prince	50		.10	4.50	6.00	.75	0	No
New York	G. B. Howe	100	100					0	Yes
New York	F. W. Lesser			.12	4.20			0	Yes
New York	A. J. Spahn	100	100					10	No
North Carolina	C. S. Bumgarner	110	110						No
North Carolina	C. L. Sams	100	105	.15	4.70	6.25	1.25	0	Yes
Ohio	R. D. Hiatt	90				5.00	.90	1	Yes
Ohio	F. Leininger	100	100					0	Yes
Ohio	J. F. Moore	80	80	.12	4.30	4.50	.80	5	Yes
Oklahoma	J. Heueisen	100	100	.15	5.50	6.00	1.00	0	No
Oklahoma	C. F. Stiles	110	100					0	Yes
Oregon	E. J. Ladd	100	75					0	No
Pennsylvania	H. Beaver							0	Yes
Pennsylvania	D. C. Gilham	105		.13	5.40	7.00	1.00	3	Yes
Pennsylvania	C. N. Greene	100	100	.12	4.80		.75	4	No
Pennsylvania	G. H. Rea	75	90						No
Rhode Island	A. C. Miller	50	77				1.25	0	No
South Carolina	A. S. Conradi	100	100			6.00	1.25	0	Yes
Tennessee	G. M. Bentley	50	75			9.50	1.50	0	Yes
Tennessee	J. M. Buchanan	100	100						No
Texas	T. A. Bowden	40	50				.75	2	No
Texas	J. N. Mayes	50	60	.10	3.35	3.85	.60	0	Yes
Utah	M. A. Gill	90	80	.08	3.60	4.00	.50	0	No
Vermont	J. E. Crane	125	125			7.20	1.25	0	Yes
Virginia	L. N. Gravely	65	40	.15	4.80	6.00	.85	0	No
Washington	W. L. Cox	50	65					0	No
Washington	G. W. B. Saxton	95	100	.10			.75		No
Washington	G. W. York	50						0	No
West Virginia	T. K. Massie	60	75			6.00	1.00	0	No
Wisconsin	E. Hassinger, Jr	100						0	No
Wisconsin	N. E. France	75	60					0	No
Wisconsin	H. F. Wilson								No

Requeen Now!

While you can get good queens cheap. L. L. Forehand's Queens are backed by twenty years of careful selecting and breeding. They are bred from the imported stock direct from Italy, the best in the world for honey-gathering, disease-resisting, prolificness, gentleness and non-swarming.

Give my queens a trial, and, if you are not entirely satisfied in every way, your money will be refunded.

Guarantee

I guarantee every queen will reach you alive, to be in good condition, that she will be purely mated and give perfect satisfaction in every way. Safe delivery guaranteed in U. S. and Canada only.

	1	6	12
Untested	$0.95	$ 5.25	$ 9.95
Selected Untested	1.10	6.25	12.00
Tested	2.00	10.00	18.50
Selected Tested	2.75	15.00	27.00

If queens are wanted in larger quantities, write for special prices.

L. L. Forehand, Fort Deposit, Ala.

A Chance to Save Some Money on
SHIPPING CASES

100 Regular Shipping Cases, 4¼ x 1½, packed 50 per crate	$25.20
400 Regular Shipping Cases, 4¼ x 1⅞, packed 50 per crate	26.10
250 Regular Shipping Cases, 4x5x1⅜, packed 50 per crate	25.20
230 Regular Shipping Cases, 4x5x1⅜, packed 10 per crate	5.25
90 Regular Shipping Cases, 4¼ x 1⅞, packed 10 per crate	5.50
210 Regular Shipping Cases, 4¼ x 1½, packed 10 per crate	5.25

All cases listed are single-tiered with glass K. D.

The A. I. Root Company

873 Massachusetts Ave. Indianapolis, Indiana

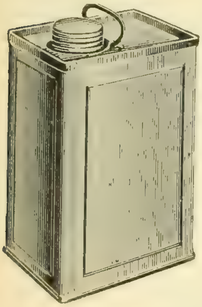
To Sell Your Honey Well →

It Must Look Well

THIS means, whether you sell your honey locally or ship it, and whether it is comb or extracted, that it must be put into good-looking packages,—tin, glass or carton. Then, if you ship it, the shipping case must be strong enough to prevent any possible damage to the package in transit. The dressing-up of your honey package with a handsome label is another part of the honey-selling business. If you are going to do roadside selling, as thousands of beekeepers do, you will want an attractive ''Honey for Sale'' sign. You may, too, want some sample mailing blocks in which to send samples of your honey to distant customers, or you may need a pair of scales for weighing sections, or a stamping outfit to mark net weight on your sections.

WE are ready to serve you in any and all of these ways with the very highest quality of goods, very promptly and at some considerably reduced prices. Just run through the list of honey packages, cans, pails, tumblers, jars, cartons, shipping cases. etc., etc., listed below. Note the lower prices quoted on many of these articles—then order today while the stocks at our home office and at our branches are full and in finest condition.

Following prices are subject to change without notice. There is already an upward tendency in the market on metals.



FIVE-GALLON (60-LB.) SQUARE CANS AND SHIPPING CASES.

Our five-gallon square cans are equipped with wire handle, 1¾-inch screw cap, put up in strong re-shipping cases, having ⅞-inch ends, ⅜-inch sides, bottom and top, no partition. The following prices are f. o. b. Medina, New York, Baltimore and New Orleans. Shipment will be made from point nearest you. Prices:

	10 cases.	50 cases.	100 cases.
5-gallon square cans, 2 in case	$10.50	$50.00	$95.00

(Shipment from Chicago 10c per case extra.)

SMALL SCREW CAP OBLONG CANS.

The small screw-cap oblong can is very convenient for selling honey locally as well as for shipping. Equipped with wire handle, 1¾-inch lined screw-cap. Prices:

6 1-gallon oblong cans	Weight 15 lbs.	Per box, $ 1.50
12 ½-gallon oblong cans	Weight 20 lbs.	Per box, 2.10
100 1-gallon oblong cans	Weight 110 lbs.	Per box, 18.00
100 ½-gallon oblong cans	Weight 80 lbs.	Per box, 13.50
100 ¼-gallon oblong cans	Weight 50 lbs.	Per box, 10.50

PARCEL POST CANS IN CARTONS.

This is our regular small screw-cap oblong can equipped with a suitable carton for shipping honey by parcel post. This arrangement makes shipments by parcel post safe and secure. With a little advertising, a beekeeper can develop a nice mail order business for his honey, using this parcel post can to ship. Prices:

½-gallon parcel post can with carton	1, 22c;	10, $2.00
1-gallon parcel post can with carton	1, 30c;	10, 2.70
½-gallon carton only	Per 100	4.50
1-gallon carton only	Per 100	6.00

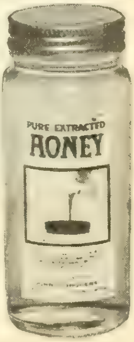
ROUND JARS.

The round jars we have to offer are made of clear white glass. This white glass does not darken the honey's color as green glass does. The jars are fitted with lacquered tin caps, lined with thick wax paper disk; packed in re-shipping cases of 24 jars each. The following prices are f. o. b. Medina, Chicago, Indianapolis, New York, Philadelphia and Norfolk. Shipment will be made from point nearest to you. Prices:

	Weight.	Per Case.	30 Cases.
16-oz. Round Jar, 24 in case	18 lbs.	$1.20	$33.00
32-oz. Round Jar, 12 in case	12 lbs.	.90	25.50

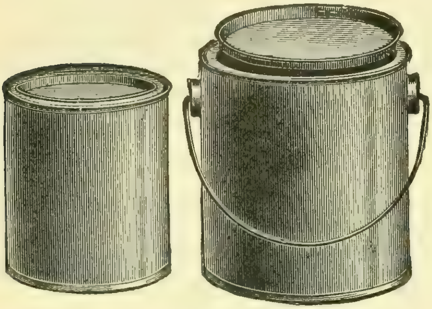
The following prices on round jars are f. o. b. St. Paul and New Orleans, and these prices will be applicable only when shipment is to be made from these points:

	Weight.	Per Case.	30 Cases.
16-oz. Round Jar, 24 in case	18 lbs.	$1.35	$37.50
32-oz. Round Jar, 12 in case	12 lbs.	1.00	28.50



SEE NEXT PAGE.

To Sell Your Honey Well



FRICTION TOP CANS AND PAILS.

We offer these for shipment in original packages only, either from Medina or from factories located in Central Western Virginia, Southern Ohio, Southeastern Iowa and Southeastern Louisiana. Prices:

	Box of	Price	Carton of	Price	Crate of	Price
2½-lb. can..	24	$1.10	100	$4.00	500	$18.00
5-lb. pail..	12	.90	50	3.25	100	6.50
10-lb. pail..	6	.75	50	4.50	100	9.00

(NOTE—The 2½-lb. can has no bail while the 5-lb. and 10-lb. pails have a wire bail.)

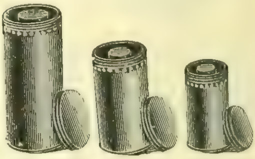
6½-OUNCE TUMBLER.

For an inexpensive package holding a scant half pound of honey, the tin-top tumbler is very popular. We supply with these tumblers, besides the tin top, a wax paper disk for sealing it tight when filled with honey. 6½-ounce Tumbler with tin top, 4-dozen case......$1.40

MASON AND E-Z SEAL JARS.

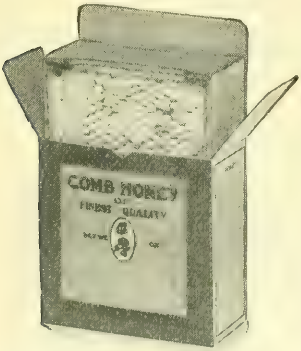
The Mason and E-Z Seal Jars we have to offer are made of clear white glass which will show off the honey far better than the cheap green glass jars usually found on the market. The Mason jar is furnished with zinc cover with porcelain lining and rubber ring. The E-Z Seal jar is equipped with glass cover and snap spring seal. Rubber ring included. We can furnish these jars in pint, quart and one-half gallon sizes. Write to Medina or the nearest A. I. Root Co. branch for lowest prices.

SAMPLE MAILING BLOCKS FOR HONEY.



Our sample mailing block consists of a small wide-mouthed bottle with cork, enclosed in a screw-top case, which conforms to the postal regulations, for mailing samples. Prices:

One-ounce block, each	10c
Two-ounce block, each	12c
Four-ounce block, each	15c



CARTONS FOR COMB HONEY.

The best salesman for the beekeeper who makes a business of producing comb honey, is an attractive and sanitary carton. Comb honey put up in cartons is free from dust and flies. Being printed in two colors with this special engraved design on the front, it makes a very handsome package. The panels all contain appropriate printed matter in regard to the food value of honey, and how comb honey is produced. Directions are given for keeping in a warm, dry place.

The Danz. or slip carton listed below is open on the sides instead of top and bottom. It is advisable to use a rubber band with this open carton. In ordering cartons be sure to mention size of sections they are wanted for.

Price of folding cartons printed.
Sizes of Sections—4¼ x 1⅞, 4¼ x 1½, 4 x 5 x 1⅜....Price per 100, $1.35; per 1000, $13.20

Price of Danz. or slip cartons printed:
Size of Sections—4¼ x 1⅞, 4¼ x 1½, 4 x 5 x 1⅜....Price per 100, $1.25; per 1000, $12.00

For printing name and address on cartons, add............Per 100, $1.50; per 1000, $3.00
For plain cartons with no printing, deduct................Per 100, $0.20; per 1000, $2.00

SEE NEXT PAGE.

To Sell Your Honey Well

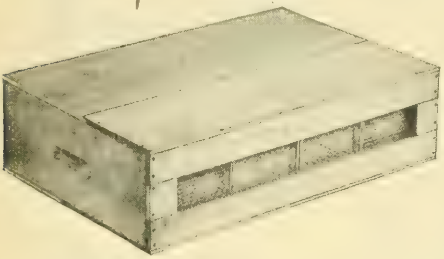
SCALES FOR WEIGHING SECTIONS.

The most simple way of finding the weight of section comb honey is to use some form of spring scale. We have two kinds which are quick to operate and handy to use.

	Weight	Price
Postal, 1-pound capacity	10 oz.	$2.50
Invincible, 2-pound capacity, with scoop	2 lbs.	3.50

STAMPING OUTFIT FOR SECTIONS.

This consists of three molding stamps—"Net weight not less than 12½ oz.;" "Net weight not less than 11 oz."; "Net weight not less than 10 oz.," and a self-inking pad.
Net weight stamping outfit for sections..........$1.60 postpaid



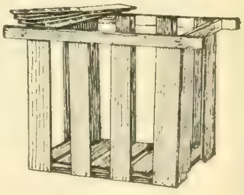
SHIPPING CASES.

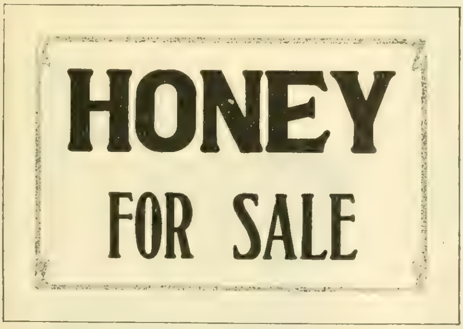
Comb honey, to be shipped safely and bring top price, requires a very strong as well as a good-looking shipping case. This is exactly the kind we make. Our cases are regularly single-tier for 24 sections, but can furnish the double-tier case from Medina or Council Bluffs. When in flat, we include nails, and as ordered we ship with or without 2-inch glass strips with the necessary grooved wood strips and end-blocks to put in the glass side. Prices:

	In flat with glass, in lots of		In flat, no glass		Wt.
Size of sections.	10	100	10	100	100
4¼ x 4¼ x 1⅞	$6.00	$58.00	$5.75	$55.50	360
4¼ x 4¼ x 1½	5.80	56.00	5.55	53.50	340
4 x 5 x 1⅜	5.80	56.00	5.55	53.50	340
4¼ x 4¾ x 1⅜	5.80	56.00	5.55	53.50	340
3⅝ x 5 x 1½	5.80	56.00	5.55	53.50	340

CARRIERS FOR SHIPPING COMB HONEY.

In shipping a quantity of comb honey the regular cases should be packed in carriers, cushioned underneath with at least four inches of straw to absorb the jar when handled. Eight 24-lb. beeway or 4 x 5 plain section cases may be placed in each carrier. These carriers have handles extending from each end to give freight-handlers no excuse for rough handling. Material for carriers will be furnished in flat only. Carriers should be lined with heavy paper when filled. Specify for what size case wanted.
Comb-honey carrier, KD..........Weight, 15 lbs. $1.75





"HONEY FOR SALE" SIGNS.

We have two kinds of "Honey for Sale" signs to offer. The one shown in the illustration is 19½ x 28 inches printed in two colors on heavy cardboard on both sides. The other one is made of strong metal with a green painted background. The border and wording "Honey for Sale," are painted yellow and are very attractive. Size 8¾ x 14 inches.

Cardboard sign. Postpaid	$0.80
Metal sign. Postpaid	1.00

HONEY LABELS.

Our catalog of handsome new honey-label designs will be out within a few days. These will be the handsomest labels we have ever offered the beekeepers. Write for this catalog, and we will mail it as soon as it is off the press.

THE A. I. ROOT COMPANY, MEDINA, OHIO

WOODMANS FAMOUS BEE-WARE

NEW BINGHAM BEE SMOKER

PATENTED

The Smoker

You Ought to Own

THE most important invention in beekeeping, as little can be accomplished without the Bee Smoker.

The *new Bingham Bee-Smoker is the most* efficient and durable machine on the market. The standard for over 40 years in this and many foreign countries, and is the all-important tool of the most extensive honey producers of the world.

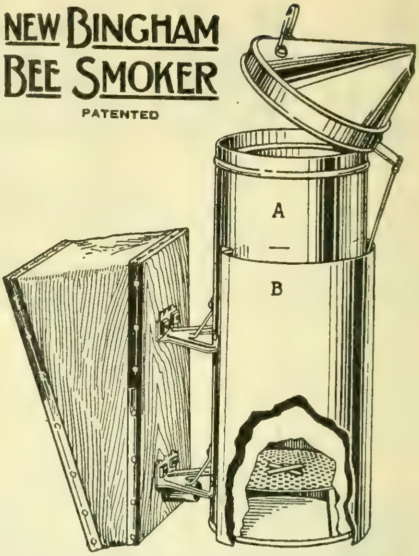
Comes with metal legs, metal binding and turned edges. The four larger sizes have hinged covers. The fire grate is of very substantial material, with an abundance of draft holes, the 4-inch size having 381 holes, equal to an opening of 2-inch square.

A valve in the bellows of the larger sizes makes the Smoker respond to the most delicate touch.

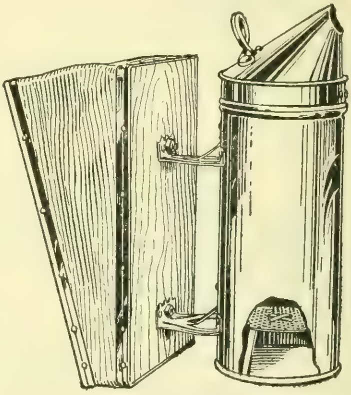
The new Bingham comes in six sizes, including the Big Smoke, which is furnished both with and without shield. The larger sizes are best, as they hold more fuel, give more smoke, require filling less often, and are especially recommended to those who work with their bees several hours at a time.

Write for our complete catalog of bee supplies and accessories. Special circular of all sizes of Bingham Smokers free for the asking.

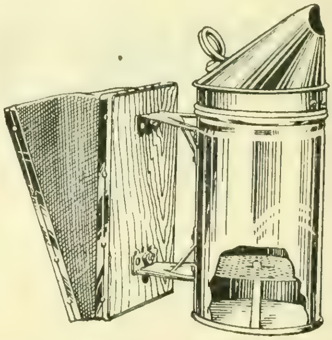
A. G. WOODMAN CO.
238 Scribner Ave., N. W.
GRAND RAPIDS, MICH., U.S.A.



BIG SMOKE—With Shield
Fire Pot, 4 x 10.



CONQUEROR.
Fire Pot, 3 x 7.



LITTLE WONDER.
Fire Pot, 3 x 5½.

A SUPERIOR QUALITY AT LESS COST

Supplies

(MADE BY THE DIAMOND MATCH CO.)

A SUPERIOR QUALITY AT LESS COST

Reasons why our prices are reasonable: Our supplies are brought to us in cargo lots by steamer from California through the Panama Canal. The resulting saving in freight cost is passed on to our customers.

One-Story Complete Dovetailed Hive

With metal telescope cover, inner cover, reversible bottom, Hoffman frames, nails, rabbets.

Standard Size.

Crate of five, K. D., 8-frame.......	$12.65
Crate of five, K. D., 10-frame......	13.25

Jumbo Size.

Crate of five, K. D., 10-frame.......	14.25

Hive-Bodies

With Hoffman frames, nails, rabbets.

Standard size, crate of 5, K. D., 8-fr..	$5.20
Standard size, crate of 5, K. D., 10-fr.	5.85
Jumbo size, crate of 5, K. D., 10-fr..	6.85

Hoffman Frames

Standard size	100, $5.20;	500, $25.00
Shallow	100, 4.30;	500, 21.00
Jumbo	100, 5.80;	500, 28.00

Diamond Brand Foundation

Medium	5 lbs., 68c lb.;	50 lbs., 65c lb.
Thin Super...	5 lbs., 75c lb.;	50 lbs., 72c lb.

Comb Honey Supers

For 4 x 5 x 1⅜ sections including section-holders, fence-separators, springs, tins and nails.

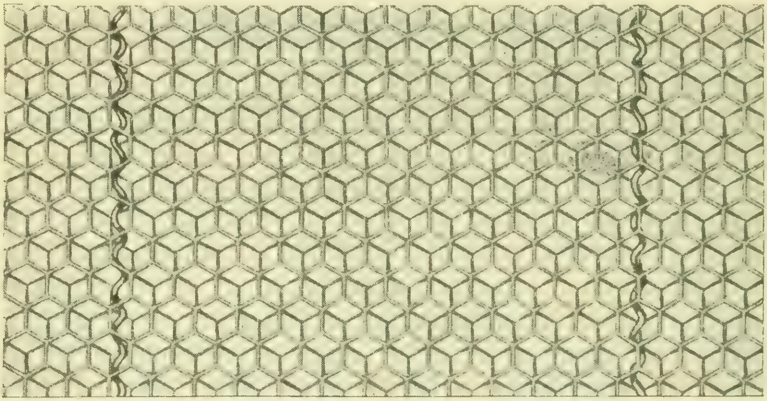
Crate of five, K. D., 8-frame........	$5.60
Crate of five, K. D., 10-frame.......	6.00

HOFFMAN & HAUCK, INC.

WOODHAVEN, NEW YORK

Shoulders of Strength
in
Dadant's

Makes non-sag all-worker comb, **WIRED.** Cuts out cost and labor of hand wiring.



Quickly accepted by bees without reservations. **NON-SAG**, the finished comb a delight to the eye.

Wired Foundation

NOTE THE CRIMPS in the wires. These are permanent, even under weight, and they reinforce the comb with angles of support radiating in all directions.

THIS IS AN ENTIRELY NEW IDEA in foundation making. The wire, woven into the wax by machinery, makes a rigid yet flexible sheet, producing a straight, desirable, **non-sag** comb.

DON'T BE DECEIVED by evidence from previous experiments with vertical wiring. There is no precedent for this new means of support, affording **radiating shoulders of strength throughout the comb.**

TESTED BY TIME AND USE. Dadant's Wired Foundation is not an experiment of a few months' time, but is a carefully evolved specialty of a lifetime of foundation specialists. It has also been thoroughly tested for several years in large apiaries in all parts of the United States.

DADANT'S WIRED FOUNDATION may be used in new-style split bottom-bar frames or in the old-style one-piece bottom-bar frames with equal satisfaction. It is also adaptable to any size and style of brood or extracting frame.

COSTS NO MORE. Since Dadant's Wired Foundation cuts out the cost and labor of wiring, its extra price of three cents per pound above the catalog prices of old-style foundation is thus more than returned to the beekeeper.

ASK FOR SAMPLES. A small mailing sample sent free on request. Special Offer: A sample of seven sheets, for either split bottom-bar or old-style one-piece bottom-bar frames will be sent, postpaid, to any address in the United States for $1. Specify size desired. Only one sample to a person.

Wired Foundation is sold by all distributors of Lewis ''Beeware'' and Dadant's Foundation. Send them your orders.

Dadant & Sons, Hamilton, Illinois

Catalog and Prices on Foundation, Bee Supplies, Beeswax, Wax Working into Comb Foundation and Comb Rendering for the asking.

GLEANINGS IN BEE CULTURE
JULY, 1922

EDITORIAL

IMPORTANT.—Be sure to write to your Senators. See bottom of second column this page.

* * *

Making Increase at Close of Honey Flow.

AT the close of the honey flow, the colonies are usually very strong, and, if there is no later honey flow, this great horde of workers is now of but little value to the colony. Such a large population is needed only during the honey flow. In some localities this great force of bees will be practically idle the remainder of their lives; but, of course, if there is any nectar available at any time before these bees die off, they will quickly pay for all it cost to rear and maintain them.

Many beekeepers have learned the trick of utilizing this great force of workers at the close of the honey flow, where the season closes in July, by making increase. An easy way to do this is to divide the bees and the brood of a colony into two parts, making the divisions about equal, and then hauling one of the divisions to an outapiary. This prevents the field bees from returning to the old stand, thus avoiding one of the difficulties encountered in making increase in the same apiary. A young queen is, of course, introduced to the now queenless colony.

If no out-apiaries are being operated, the hive should be left two stories high when the honey is taken off. The queen, together with one frame of the youngest brood, should then be placed below and the rest of the brood in the upper story and a queen-excluder placed between the two stories. Ten days later the upper story can be taken away to make increase, at which time a young laying queen or a queen-cell should be given. The field bees will, of course, return to the old location, but the rapidly emerging brood will soon repopulate the newly formed colony.

* * *

The Isle of Wight Disease Bill.

THE House of Representatives has passed the bill mentioned in our last issue, prohibiting further importation of adult bees into the United States except under regulations made by the Secretary of Agriculture and the Secretary of the Treasury.

While no direct opposition has come to this journal, some has made itself manifest to the American Bee Journal, to the effect that it is not necessary to bar all countries from sending bees or queens into this country at this time. The fact that Isle of Wight has now got into Europe makes it necessary to prohibit all countries from making such shipments until an investigation can be made. It is understood that Canada will be exempted at once. The bill that has passed the House, and which is now before the Senate, makes it possible to send honeybees for experimental or scientific purposes "upon such conditions and under such regulations as the Secretary of Agriculture and the Secretary of the Treasury shall prescribe." It further provides that these two officials may "make regulations to admit honeybees from countries where no dangerous disease of honeybees exists."

In interpreting the foregoing conditions the Secretary of Agriculture has made this statement: "I can assure you that when it is found desirable to import adult bees from any region, this will doubtless be permitted on evidence of the necessity and safety to the general beekeeping interests of the United States."

The opposition has further stated that the law is an attempt to help the breeders of Italians. It seems hardly necessary to answer this as the purpose is to *protect an industry before it is too late.* The law has provided means by which other races may be imported from countries where the Isle of Wight disease does not exist.

What more could we ask? Apparently the opposition has lost sight of the fact that honeybees or queens under the provisions of the proposed law may be sent for scientific purposes through the United States Department of Agriculture, or that the two officials mentioned may at any time, on proper evidence, lift the embargo against any country from which the importation of bees or queens is prohibited.

With this understanding we hope that every one of our subscribers (if they have not already done so) will address a letter to Senator Norris, chairman of the Agricultural Committee of the United States Senate, Washington, D. C., indicating your approval of Senate bill No. 3506, and urging an early hearing, and at the same time address another letter to each of your United States Senators, asking for their support of the same measure. *Do not delay this a minute, but send a postal from your postoffice before you leave.* If you do not know who your Senators are, ask your postmaster.

We can imagine no greater calamity to the beekeeping interests than to have the Isle of Wight disease imported into this country. It is infinitely worse than foul brood, because *there is no known cure.* The best and only cure is to keep it out of this country. It would be unwise to make exemptions now unless it is in the case of Canada; and the fact that the disease is known to be not far from localities in Europe from which queens have been imported makes the menace all the greater. The early passage of the bill in the Senate is, therefore, imperative. Later on, exemptions can be made upon the submission of proper evidence.

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Samples of Adult Bees Wanted by the Bureau of Entomology.

THE following letter from Dr. E. F. Phillips is self-explanatory. It is highly important that beekeepers co-operate in this, for, if this mite should be brought into this country, we should know it the first minute possible.

> I shall appreciate it greatly if you will ask through Gleanings in Bee Culture that beekeepers finding any adult bees that show abnormal conditions will send samples to this office for examination. Last summer a considerable number of samples of adult bees were examined, and no mites causing the Isle of Wight disease were found. While it is hoped that the mite is not found in this country, there will remain the need for further search, and this office will be glad to have such material. Queen-breeders and others who have imported queen bees from foreign countries should carefully examine the colonies to which the queens were introduced, and, if anything unusual is found, samples should be submitted. It will be well to send about 250 bees where that is feasible, together with a description of the conditions observed. In some bees recently examined which came with imported queens unusually heavy infections of *Nosema apis* were found, but so far the mite, *Acarapis woodi*, has not been encountered in such cases. Your co-operation in obtaining additional material for examination will be greatly appreciated.
>
> Very truly yours,
> E. F. Phillips.
>
> Bureau of Entomology, Washington, D. C., June 7.

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Planning Now for Next Year.

IT may seem strange to begin to think about preparing for the 1923 honey crop now in the midst of the harvest of the 1922 crop, but the foundation of next year's crop must be laid in July and August. Thousands upon thousands of colonies are rendered useless for the following summer every year by neglecting some little essential at this time. One great difficulty is that, at this season, the beekeeper is so deeply engrossed in the harvesting of this season's crop that the crop for next year seems of little relative importance; but, later, there will be plenty of time to regret having neglected some of the things essential to the maintenance of the colonies in a prosperous condition. Two things in management for next year's honey crop stand out prominently at this time—the replacing of all inferior queens, and making sure that the colonies are not stripped too closely of their stores. When taking off honey to be extracted, an upper story containing considerable honey should be left on the hive. If feeding for winter is to be done later, as is the practice in Canada and the coldest portions of the United States, the unfinished honey may be put into this upper story that is left on the hive through the late summer and fall. This extra story, partly filled with honey, not only provides food for the bees after the honey flow ceases, but if there is a fall honey flow it provides room for storing the late-gathered honey. If not too far north the extra story can be left on all winter, in which case it should be nearly filled with good honey.

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Requeening in July.

MORE and more beekeepers are learning that it pays to have young queens in their colonies during the latter part of the summer. It was noticed many years ago that the largest yields usually come from colonies that were parent colonies the last season, and not often from the swarms of last season. The reason for this is largely that the parent colony had a young queen during the latter part of the season, while the swarm usually retained the old queen. Young queens, that begin to lay in July or August, lay more eggs during late summer and autumn than older queens, thus supplying the colony with more young bees for winter. These young queens are also in their prime the next spring when they are expected to do their best work for the heavy spring brood-rearing period. While it may not always be advisable to replace the queens every year, the tendency for beekeepers to do so is increasing in some localities when producing extracted honey. Comb-honey production does not place such a heavy burden upon the queens as does extracted-honey production, and as we go northward from the tropics the burden is also somewhat decreased on account of the shorter season. In such cases it may be well to keep the queens two years; but, wherever the queens are worked hard, many are coming to believe that it pays to requeen every year.

In a large part of the country there is no better time for doing this than during the latter part of the honey flow in July. This permits the doing of the work while the bees are still easily handled, and the young queen begins to lay in time to supply the colony with an abundance of young bees before the cessation of brood-rearing.

A Wonderful Queen's Comb Honey Record.

WE have just come from visiting C. B. Hamilton of Fenton, Mich., who, a year ago, purchased from the South 32 two-pound packages of bees, each containing a queen. One of these queens, with her 10,000 bees, performed a feat in comb-honey production which at first thought seems unbelievable. We will frankly say that we did not see how it could be done; but after an extended interview with Mr. Hamilton we are sure our readers will consider it quite within the realm of possibility.

The bees were received April 18—so early, in fact, that one would think that they would chill to death in the climate of Michigan before they would actually get under way. But Mr. Hamilton took pains to see that they were warmly packed, given hot syrup from time to time, and, in fact, every attention possible except to give the bees frames of brood or more bees. One package of the bees and the queen clearly outstripped all the rest, and when Mr. Hamilton saw what they were doing he watched them very closely. To make a long story short, the queen kept a two-story hive full of brood during the breeding season, sometimes having as many as 20 frames at a time, and part of the time she went up into the first super of sections with drawn comb. Mr. Hamilton did not know what she was going to do, and therefore he did not keep a record, he says. The flow from white clover last year was practically a failure on account of a severe drouth. This very drouth made red clover just right for the honeybee—that is, it stunted the blossoms so the bees could get the nectar. At all events they immediately went to work on the red clover, which, in connection with sweet clover and alfalfa, yielded an enormous amount of honey. When this red clover began to open up, Mr. Hamilton put on six supers of sections, each section containing a comb two-thirds drawn out from the previous season. In a few days, said Mr. Hamilton, these were filled up with honey. Then he piled on more supers. These were again filled in an incredibly short time, and still more supers, until he had 24 supers, each super containing 24 sections of drawn comb, or a pile of supers, including the hive, 12 feet high; "and at the end of the season," remarked Mr. Hamilton, "I took away, filled, 23 24-pound shipping cases of honey."

So far this story will seem almost unbelievable; and as we tell it we know many will say it is impossible; but taking the story just as Mr. Hamilton gave it, it is evident that the queen was the most prolific he ever knew of. She kept on laying, and he kept on giving warm sugar syrup up to the honey flow until there were bushels of bees—how many he does not know.

It is Mr. Hamilton's policy in the production of comb honey to put on the first super of unfinished sections from which the honey is extracted and the cells cut down to about half their original depth with a special knife which he has designed. After they have been extracted and leveled down they are given to a big colony to clean up, "because," said Mr. Hamilton, "there must not be a particle of honey left in the sections, as that will cause granulation."

The next step is to put one of these supers containing drawn combs on the hive when it is ready for it. After that it is his rule to give supers containing only full sheets of foundation; but in the case of this remarkable queen, in order to see what she *could do* he gave her and her bees only supers of fully drawn combs. With bushels and bushels of bees and a long honey flow, he actually produced 577 sections from the one queen and his original two pounds.

Remember that his main flow did not begin until comparatively late, so the queen had a chance to build up from the syrup that was constantly given her.

Mr. Hamilton has sold the queen that made this record, and therefore he has no ax to grind as he has no queens for sale.

A Unique Trick of the Trade for Comb-Honey Producers.

Mention has been made many times in the journals of applying hot paraffin to hive parts to prevent the bees from smearing these parts with liquid propolis; but somehow the idea seems never to have been developed except in parts of the West, especially in Colorado and Idaho. Mr. Hamilton has worked it down to a fine science. He takes a pan of hot paraffin with an ordinary varnish brush and gives a fine, nice coat to the tops of his sections after they are in the supers and before they are given to the bees. The brush when not in use must be kept continually in hot paraffin; and just before applying it to the sections it is wiped off on the pan to remove the drip, when it is given one sweep lengthwise over the tops of four sections. The brush must not be worked back and forth, for that will cause bubbles and make an uneven surface. Supers should be tilted up to an angle of 45 degrees, and the brush given only one sweep down. "Bees will not then deposit any smeary glue over the tops of the sections having a thin coating of paraffin on top," said Mr. Hamilton.

This trick of coating the tops of the sections with paraffin, while old, is good just the same. So, likewise old is the trick of giving drawn combs in sections; but when it helps to increase the crop of comb honey and at the same time invite the bees up into the sections with a rush, it is certainly worth trying. Don't forget that "bushels" of bees are another important factor. That, of course, means a *good queen.* We have come to the stage in apicultural history where we must have not only larger brood-nests but also queens that can fill them.—E. R. R.

MIGRATORY BEEKEEPING

Success Depends Upon Keen Observation, Proper Application and Hard Work

By M. C. Richter

THE element of chance always accompanies the migrator, yet disregarding this fact, the practice of migratory beekeeping as carried on in California is decidedly profitable. Our semi-tropical climate, varied topography, long seasons and good roads make this possible. In addition, the states of Nevada and California practice reciprocity. It is quite true that migratory beekeeping helps to disseminate disease, but its practice should be condemned on that account no more than, for instance, the transportation of sheep from one pasture to another.

General Considerations.

Migratory beekeeping brings into play nearly every phase of beekeeping. Of course, bee behavior, the very foundation of beekeeping, must be thoroughly understood, and it requires a great deal of ingenuity to maintain intact that big working force throughout the long season. Of next importance is plant behavior and the relationship which it bears to climate, especially seasonal variations. As pointed out in last month's article, this phase of our problem is the most puzzling, and it is here that we experience the big element of chance, which, by the way, affords such keen delight to almost all of us. Such possibilities! We must be believers in the adage, "Anticipation is two-thirds the pleasure of life." In the winter time when we plan our migratory adventures we become quite worked up as we proceed from one contemplated move to another. Frequently our plans do not work out. It is because we know so very little about honey flows. How are we going to know whether they are going to be light, or when they will begin, or when they will end? We never shall be able to know with any degree of certainty, as we are unable to foretell weather conditions which influence them. Climatic records and the records pertaining to the length and character of flows over a period of years are of inestimable value to the migratory beekeeper.

Keen observation, an ability to apply such observations to practical use and the ever increasing value of records are a part of this work that no one can afford to neglect.

Another important item is that of maintaining an accurate account of operating costs throughout the season. The cost of production for each migration also should be definitely known and made use of in connection with the number of pounds of honey produced. This branch of the work is ever so important, for it may happen that a certain migration resulting in a 70-pound surplus actually proved less profitable than an another move where only a 50-pound surplus was gathered. In such a case the cost of moving in the former was greater than that in the latter.

Another qualification pertinent to migratory beekeeping, which has not been considered to any extent in the past, is that of endurance. It happens frequently that the beekeeper must drive his truck throughout the entire night and well into the next morning before his destination has been reached. The test of one's strength comes during the morning hours and especially when the colonies are being placed on their stands preparatory to releasing the bees. Anxiety regarding suffocation likewise taxes our powers of endurance. Yet these night experiences linger longer in our memory and add immensely to the fascination

The modern method of moving entire apiaries long distances over California paved highways.

of migratory beekeeping. There is no gainsaying the fact that there is a great deal of hard work connected with moving of bees.

Honey Sources.

In migratory work we do not always move to obtain a surplus. Early in the season it is often the intention to have the bees situated where they can avail themselves of early bloom, such as willow, deciduous fruits, principally almond and prune, and certain varieties of eucalypti and mustard. In the fall it is necessary for the bees to breed up sufficiently so as to rear the necessary amount of young bees to insure favorable spring breeding, and also to secure enough stores for the same purpose. Thus, the migratory beekeeper avails himself of the late-blooming honey plants. The chief late and early plants are willows and eucalypti. In parts of the San Joaquin Valley, in favorable years, willow furnishes honeydew as late as November and December, and every year in all parts of the state, pollen and nectar in January and February, according to the season. Several eucalypti, according to the species and season, bloom during the winter months and have proven their worth for stimulative purposes.

As spring advances, orange and sage are the big drawing cards. Sometimes they come into bloom simultaneously; but orange secretes earlier than sage and, since the flow is shorter and rapid, there is time enough to move to the sage as the orange flow begins to fail. At the termination of sage, there are several good nectar sources. The central California sage beekeepers prefer to move to alfalfa; others may tarry longer and wait for a flow from either wild buckwheat, wild alfalfa, or possibly sumac; or they too may journey, but toward the coast, to the lima bean fields of Ventura and Los Angeles counties.

When moving from sage to alfalfa the preference is to go into Nevada, since alfalfa is a far better secreter in that state than it is in California. Owing to the foulbrood laws of our neighboring states, this form of migration confines itself to the shipment of three-pound packages of bees. However, the alfalfa of the San Joaquin Valley is nearer at hand and very good yields are obtained from the second, third, fourth and fifth crops. April, May and June are the sage months, according to the locality and season. Alfalfa in California usually starts to secrete in June and continues till August or September.

In the fall of the year the great valleys afford better bee pastures than the Coast Range Mountains or southern California. The upper Sacramento Valley leads with star thistle, a most excellent honey plant, producing a most excellent honey. Other prominent Sacramento Valley fall plants are mint along the rivers, and tarweed, yellow sticker and blue curls along the plains. In the San Joaquin Valley the honeydew from the willow, in favorable seasons, starts early and lasts well into winter. Along the plains alkali weed, spikeweed, jackass clover and blue curls are good secreters of nectar, especially where they have been favored with late spring rains.

Nevada beekeepers think quite as much of our orange groves as we do of their alfalfa fields, and these two sources of nectar are worked to mutual advantage.

When to Move.

One of our most difficult problems is to determine the best time to move. Again we find ourselves confronted with the elusive subject concerning the character and duration of honey flows, and we find it necessary to resort to our records and observations. Our records should show us our daily gains, and when we find that such gains have lessened to four or three pounds, or perhaps notice a very slight inclination to rob (a sure sign of flow stoppage) we know at once that it is time to move. We disregard the fact that we may possibly get a daily gain of two or three pounds for another week, and also that our next flow may not start for several days, a week, or possibly longer. We believe that a migratory beekeeper always makes a mistake if he waits till a flow is practically over before moving. If he does, he has shaken somewhat the morale of his bees, his queens have practically ceased laying, and the brood-nests during the latter days have become well filled with honey. Conditions such as these may be avoided by moving early, and it is a well-established fact that moving incites breeding. A journey always seems to stimulate the bees to greater field activity. Thus when bees have been moved to a new locality, although the main flow has not yet commenced, they are, in the main, better prepared for future honey gathering.

The Ford truck does good work when distances are not too great.

If it is found necessary to move bees in warm weather during a good honey flow, it is better to do so in the early hours of morning than in the evening when the bees have arrived home. The reason is that there is less nectar in the hives at such a time.

Preparation of Colonies for Moving.

Upon preparing a hive for moving, much depends on the distance it must travel, the strength of the colony, the season of the year and the manner in which it is conveyed. Every colony that undergoes transportation should have at least three pounds of honey for short distances, and 10 to 15 pounds for the longer distances. This honey should be so distributed that each frame does not contain more than two pounds, if possible. If it contains more, the likelihood of virgin comb, especially, breaking loose from the frame, on account of the constant jarring, is exceedingly great. Frames, well filled with old comb built on wired foundation, well clamped or otherwise fastened, with no more than three pounds of honey, can stand an unusually large amount of rough handling. There are several ways in which the frames may be held securely in the hive. When the Hoffman self-spacing frame is used there is no shifting of frames possible, but other styles of frames need something to hold them in place. In cases of this kind, a strip of wood with a series of teeth fastened upon it, somewhat similar to a hay rake, is pushed down between the frames one at each end of the hive. The teeth fit between the frames fastening them all securely.

The kind of hive used is important, but of still more importance is the condition of the hive when being shipped. This, of course, applies to the covers and bottom-boards as well. These should not only be strong and fit tightly to the hive or screen, but also so constructed that they can be piled one upon the other without any danger of working loose, or being broken. Migratory beekeepers should have their bottom-boards nailed fast to the hive.

Bees moved in the winter, or when the colonies are not very populous and it is quite cool, do not need a screen over either the top or bottom of the hive for ventilation; but the cover is nailed on, the hive-bodies are cleated and a V-shaped strip of wire screen is pushed into the entrance.

On moving strong colonies during warm weather, deep top screens must be used, and if the colonies are very populous, and the distance fairly great, it would be wiser to move without some of the flight bees. This may be accomplished by moving rather late in the afternoon while some of the bees are still in the fields. In such a procedure, a few weak colonies may be left in the yard in order to pick up the homeless bees. The danger from ''melt downs'' in warm weather is so great that it has been found expedient to sacrifice a few thousand of the older bees when moving under such conditions. It should also be remembered that Italians are less excitable than black bees, and consequently undergo a journey much better.

Ample super room with deep screens afford clustering space for the bees away from the brood and honey and help greatly towards preventing suffocation. Of equal importance in this respect is proper ventilation. When bees are on the move there is usually a good circulation of air about the hives, but when they become stationary and are exposed unavoidably to the sun, there is very great danger of losing them. At such times dousing with cold water does not seem to help. If the bees begin to ''sweat'' they should be released at once. We give water only when we want to save the unsealed brood in the hive, and this is always done in the morning, when, under normal conditions, the water-gathering bees leave the hive for that purpose.

Big Sur, Calif.

PIONEER BEEKEEPING

P. H. Elwood Had a Large Part in Development of Self-spacing Frames, Solving the Swarming Problem, Etc.

By E. R. Root

On May 10, 1922, or a few weeks after his 75th birthday, one of the pioneer leaders in beekeeping in the State of New York, if not in the whole United States, passed away. I refer to P. H. Elwood of Starkville, N. Y. While Mr. Elwood did not belong to the earlier class of pioneers, such as Langstroth, Quinby, Gallup, Wagner and Dzierzon, he was nearly contemporary with them. When he was a young man, at the early age of 23, he was able to build on where they left off. In 1870 he went into partnership with Capt. J. E. Hetherington, one of the most extensive honey-producers, then known in the world. Five years later he went into business for himself, and continued one of the largest producers of honey in the United States, operating over 1000 colonies for many years. Mr. Hetherington, his former partner, was brilliant, scintillating, a man full of ideas, and very much ahead of his time. Mr. Elwood, likewise, very much ahead of his time, was the opposite in some respects, in that he was conservative, cautious, and when he did adopt a new idea it was only after it had been shown in a small way to have value.

The pity is that not more beekeepers are built along these lines.

Two Schools in Beekeeping.

In the 60's and 70's there were two schools of beekeepers. One advocated a loose hanging frame without spacing-devices, such as Mr. Langstroth invented and recommended. The other school advocated and adopted an entirely different style of hive and frame—a frame of the self-spacing type with ends closed throughout. Hetherington, Elwood and many more in New York belonged to the latter school. There were some of the other school who were inclined to poke fun at them because they had adopted the bee-smashing (?) hive of Quinby, the frames of which were supposed to be daubed up with bee glue, and which, it was alleged, required hours for their manipulation when the others required only minutes. Neither Hetherington nor Elwood paid very much attention to the jokes fired in at them by the users of the Langstroth equipment. They kept still and sawed wood; or, more exactly, they kept right on producing honey and making money.

I may be pardoned for saying that it was not until 1890 that the ill-founded notions concerning the Quinby system were dispelled. During that year I conceived the idea of riding through the state of New York on a new safety bicycle, something that was more novel by far than the airplane of today. My objective point was the locality of the Hetheringtons and the Elwoods. I became convinced that there were some very fine features connected with the Quinby system which was later modified by Mr. Hetherington; and with that end in view I was not so very long in trundling my two-wheeler from Buffalo to Starkville, N. Y., the home of P. H. Elwood. I went directly to the hotel, but was told by the proprietor that he had positive instructions to tell me to go on to Mr. Elwood's home. I obeyed orders and arrived just about supper time, somewhat leg-tired, dirty, and wet with perspiration, but hungry enough to eat of everything on the table, and I did. I met there a family of boys and girls; a mother who received me as one of her own sons, and a father, a dignified cultured gentleman who made me more than welcome. He had been apprised of the object of my visit, and with the greatest care showed me how he could manipulate the so-called ''bee-smashing Quinby hive and frame.'' During the week that I was with him he carefully explained to me the advantages of a closed-end frame—how the brood would be built up to the end-bars because there would be no side-eddying currents of air; how he could hunt queens; how he could dissect the hive, take it all to pieces and put it together again, and yet not kill a bee, and that with no other tool than a common jackknife; how those bad (?) Quinby frames, instead of being all stuck up with bee glue so that they would have to be separated with a cold-chisel, could be separated and handled with ease. He showed how, when he opened up a Hetherington-Quinby hive, the daylight would pour through the hive. When he separated the frames he opened up the hive at its ends, letting the light in. When he got through with his manipulation he put the frames together, even though the bars were covered with bees, in such a way as not to kill a single bee, and certainly in much less time than it takes to tell it. He then showed how, with a couple of panels on the outside, he could, in connection with just the frames, make a complete brood-nest without a hive-body. Such a hive, he demonstrated, could be made large or small without the use of division-boards. He also showed how he could put his comb-honey supers or ''clamps,'' as he called them, on top, and then over the whole a telescoping cap such as is ordinarily used to cover the brood-nest during cool weather, but which, during the summer, is used to shade the hive and the brood-nest.

The late P. H. Elwood.

The illustration will show the original Hetherington-Quinby hive such as I saw manipulated, and which I later saw my friend, C. F. M. Stone, use in California. In this connection it is interesting to remark that Mr. Stone said his Quinby hive was always strong, and always ready for a crop of honey.

Mr. Elwood gave me my first intimation as to the value of powerful colonies; but I did not at that time have sense enough to *sense* all that he said, because I was overwhelmed with the idea of the Quinby hive with Hetherington's improvements. I remember the feeling of enthusiasm that came over me as I went with Mr. Elwood from apiary to apiary, and I was fast coming to the conclusion that we beekeepers of the West could well afford to adopt that system—especially so as it provided a hive that was expansible in size and that would not kill bees. That to me at the time, and to many others, was a revelation.

I will not take time here to tell how Mr. Elwood drove me over those York State hills to his outyards. He would not let me use my bike, as he said he wanted to talk with me. And right here Mr. Elwood helped to make some modern beekeeping history—something that I have been wanting to tell the world for the last ten years, and now I am going to tell it.

The Birth of the Hoffman Frame.

I was planning to go back and tell father that I thought we ought to put the Quinby-Hetherington hive on the market, because I believed it would ultimately supplant the regular standard Langstroth equipment. I was young then, and at that age, as is the case with some others, my enthusiasm was inclined to run away with my judgment. It was right here that Mr. Elwood did the beekeeping fraternity a signal service. I can not remember his exact language, but I shall quote him as follows:

''I am glad, Mr. Root, that I have proven to you that the Hetherington-Quinby system is not a clumsy, impracticable, bee-smashing outfit. But, much as I like it, I am not going to recommend it to the beekeepers who already have, perhaps, hundreds and thousands of hives built on Langstroth lines. It would cost those beekeepers too much to change over. I will take you to a man who has a frame that I believe is adapted to the regular Langstroth hive, and which, I believe, you could well afford to adopt.''

Right here, with his eyes looking over toward those everlasting hills, he stopped a moment and resumed:

''Young man, the beekeeping industry is still in its infancy. There are wonderful possibilities ahead of it. A great majority of the beekeepers of the United States have adopted the Langstroth system. I say to you it is a good one, and no man who has adopted that can afford to make a radical change; but,'' said he, ''I think it could be improved.''

''Do you mean,'' I inquired, ''that we can have a hanging closed-end frame and put it in a Langstroth hive?''

''No,'' he came back with an instant response; ''that would not work.''

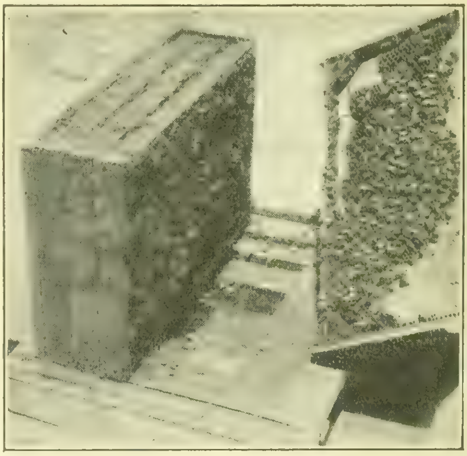
He continued, ''I will take you over to a man named J. Y. Tunnicliff who has tried to use closed-end frames in Langstroth hive-bodies; but it is a bee-smasher; and in such a hive you will lose the benefit of the closed-end frame.''

Then he offered the prediction that the Heddon hive that made use of that principle would not be a permanent success. We now know how well the prophecy came true.

We drove over to Mr. Tunnicliff's, and there I became convinced from that moment that Mr. Elwood was right. After we came away and were driving along the road Mr. Elwood continued:

''Now, Mr. Root, I am going to drive you over to see Julius Hoffman of Canajoharie. I think he has a frame with partly closed ends that is eminently adaptable to the Langstroth hive. Considering the fact that there are hundreds of Langstroth hives where there is one Quinby, I want to recommend to you the Hoffman frame.''

To make a long story short, both of us went to see Mr. Hoffman, and there I became convinced that he had the thing I was looking for—a self-spacing frame, partly closed end, that could be used in the hives then commonly in use.



Quinby closed-end frame. This shows how the brood-nest can be split up or dissected for examination.

I tried the original Hoffman frame at our Medina apiary, but found that I would have to make some changes—changes that resulted in the modern Hoffman frame that is sold now more extensively than any other brood-frame in the United States. Indeed, it has been made the standard by every bee-supply manufacturer in the country, and it has been the standard for the last 20 years. Like almost every good thing it met with a good deal of ridicule. I never went to a bee convention but that fun was poked at me for adopting and recommending that ''horrible bee-smasher,'' and ''something that did not work and never would work.''

Frankly, some of my friends will not thank either Mr. Elwood nor myself for putting this thing on the market; but the very fact that it is now a universal standard in the United States, and to a great extent in Europe, and that it is almost the only frame sold by bee-supply manufacturers, goes to show that my friend Elwood looked ahead.

My visit with Mr. Elwood, and the impressions I formed, I wrote up in this journal. This caused an amalgamation of the two systems—the Quinby and the Langstroth.

Some Other Pioneer Work.

My story is getting to be long; but I must not fail to tell you that Mr. Elwood was the pioneer in some other things. He was one of the first, if not the very first, to advocate some of the basic principles of swarm control that are now used by some of the most prominent beekeepers, which enabled him to operate more than 1000 colonies in out-apiaries for comb honey. Swarming was completely controlled by removing the queen, and then, later, destroying all queen-cells and introducing a young laying queen. I have not the time to go into the details of this; but doubtless Mr. Demuth will have occasion to refer to some of these original ideas of Mr. Elwood's at another time.

Mr. Elwood was one of the pioneers, again, in his method of wintering bees in the cellar. Some of the original principles that he initiated 30 years ago are now recommended and adopted in all the best bee-cellars all over the northern states and Canada. He used to winter 1200 colonies—all in one cellar.

The passing of such a man in the beekeeping history of the United States deserves more than a mere notice; and while the space of Gleanings is crowded we feel that, when a man of this type leaves the scene of this world's activities, we should pay proper tribute to his memory.

Right here the question might be raised, and I will answer it as I think Mr. Elwood would answer it if he were alive: "Is the Quinby system better than or equal to the Langstroth system?" I will say this much —that the latter is better adapted to modern beekeeping conditions as they exist today than the original Quinby with Hetherington's improvements, because it is more portable, better adapted to outyard work. Elwood saw that out-apiary beekeeping was coming to the front, and hence his recommendation to adopt a hive and frame—the Hoffman-Langstroth that would be suitable for moving.

AMERICAN FOUL BROOD

An Interesting Experiment in Disinfecting Frames by Boiling in Lye Solution

By Frederick W. Fabian and Ivan W. Parks

THE time was when nearly every farmer kept a few colonies of bees for his own pleasure and profit. The beehive was nearly as common a sight on the farm as the chicken coop or hogpen. In recent times, however, the beehive is rarely seen. There are several reasons for this, chief among which are bee diseases. The ravages of American foul brood and European foul brood have greatly depleted the colonies and have made beekeeping among the farmers very unprofitable and discouraging. The bee industry, like all other industries, has reached a point where specialization is necessary, and most farmers have neither the time nor inclination to specialize to the degree that is necessary to turn a loss into a profit. The handling of bees has always required a great amount of skill, but add to this the knowledge that is necessary to handle bee diseases successfully and you have a combination that requires more effort than the average farmer, with his manifold duties, can afford.

Not only has the appearance of bee diseases made necessary greater knowledge on the part of the person keeping the bees, but it has increased also the need of more intelligent apiary inspectors. The Entomology Department at this institution realizing this has included a course in bee bacteriology in the curriculum. Now, of course, it is manifestly absurd to expect all beekeepers to be bacteriologists, yet they should have some knowledge of the principles and especially of the mechanism of transmission of these diseases and their control.

Various Chemicals Have Been Tried.

Various treatments have been recommended for treating American foul brood, with varying results. Phenol (carbolic acid) was one of the earliest chemicals used, but experiments have shown it to be ineffective. Beta naphthol, salicylic acid and soft soap have likewise been tried and discarded. In some cases it was suggested to feed the bees honey which contained the above chemicals. However, the treatment that has been most successful has not been a chemical treatment but the "shaking treatment" with which every up-to-date beekeeper is familiar. After the bees have been shaken from the diseased combs and the combs melted up for wax, the next question that arises is what shall be done with the diseased frames. It is rather expensive to burn them, but this had better be done than use them again or place them where bees have access to them. It was with this point in mind that an experiment was made to determine the effectiveness of boiling the frames in a solution of lye.

An Experiment With a Solution of Lye.

The Entomology Department here recommended a solution of lye for treating frames of colonies infected with American foul brood. No previous work had been done to determine whether the solution was effective in killing all the spores of *Bacillus larvae* or not. Accordingly an experiment was undertaken to determine the effectiveness of the method. The method recommended was boiling the infected frames in a solution of lye (made by adding one can —12½ oz.— to eight gallons of water) for five minutes. The lye used in this experiment was the Red Seal brand, but any good, high-test lye may be used.

The above method was tried out in the following way: *Bacillus larvae*, the organism which causes American foul brood, was isolated by the method recommended by White (1) by using egg-yolk-suspension agar. The culture was tested for purity by inoculating it into all the laboratory media, by morphological studies and finally by feeding it, with proper precautions, to a colony of bees which were free from the disease. The pure cultures were grown for a week at 37°C and examined for spores, and an aqueous solution of the spores was made. Then 100 c. c. of the lye solution was brought to the boiling point (101.5°C) and 10 c. c. of the aqueous suspension of the spores was added. At intervals of one, two, three, five and seven minutes 0.5 c. c. portions of the material were removed and inoculated immediately into tubes of broth which had been previously acidified so that the addition of 0.5 c. c. of the alkali solution would give a reaction of pH=6.8. To these tubes of broth were added 1.2 c. c. of egg-yolk-suspension. They were then incubated at 37°C for five days.

Growth in tubes as determined by microscopic examination.

Time of boiling, 1; growth, none.
Time of boiling, 2; growth, none.
Time of boiling, 3; growth, none.
Time of boiling, 5; growth, none.
Time of boiling, 7; growth, none.

Discussion.

The data in this table would indicate that boiling lye used in the concentration recommended by the Entomology Department was effective in killing the spores of the organism in even less time than five minutes. This is to be expected since White (1) has found the thermal death point of spores from American samples to be 96°C for 10 minutes and that of the most resistant spores, those from Cuban samples, to be 100°C for 11 minutes. Here we have a higher boiling point, viz., 101.5 and in addition the caustic action of the lye.

There is one factor, however, that should be taken into consideration and that is the wax that might possibly be left on the frames. We tried experiments with boiling the frames in the solution of lye but failed to get growth. Several factors might influence the results here, however. The number of organisms that would be left on the frames and get into the lye solution would be so small that, in taking such a small quantity as 0.5 c. c., it would be easy to miss them. However, if the frames are cleaned from wax and dirt before boiling, what little remains will be dissolved by the hot lye solution and the spores killed. We were never able to obtain any spores from the frames after treatment.

Hydrogen-ion Concentration.

During the experiment we became interested in the hydrogen-ion concentration of the media and also in the hydrogen-ion concentration of the larvae. Normal bee larvae were obtained just before capping, crushed and the hydrogen-ion concentration determined by the colorometric method of Clark and Lubs (2). The hydrogen-ion concentration was found to be pH=6.6, using brom thymol blue as indicator.

We found the optimum hydrogen-ion concentration to be pH=6.8, for both the bee larvae agar and the egg-yolk-suspension agar. The organism grew well between the ranges of pH=6.6 and pH=7.0, but best at pH=6.8.

Conclusions.

1. The temperature (101.5°C) of a boiling lye solution (12½ oz. to eight gallons of water) is sufficient to kill the spores of *Bacillus larvae* in five minutes.
2. The hydrogen-ion concentration of uncapped normal bee larvae is pH=6.6.
3. The optimum hydrogen-ion concentration for the growth of B. larvae in bee larvae agar or egg-yolk-suspension agar is pH=6.6 to pH=7.0.

The authors wish to thank Professor R. H. Kelty of the Entomology Department for his interest in the work and for feeding the organisms to the nucleus.

East Lansing, Mich.

[A boiling lye solution has been used by beekeepers for many years in cleaning propolis and wax from frames, separators or other hive parts, the idea having been first suggested by Miss Emma Wilson, sister-in-law of the late Dr. C. C. Miller. In using lye to clean the frames in the treatment of American foul brood, the first consideration in the minds of beekeepers has been that of removing the propolis and wax; but, as the authors point out in this article, the lye helps to destroy the spores of American foul brood both by raising the boiling point of the solution and by its caustic action. The technical discussion of the optimum hydrogen-ion concentration is given here for those who may be interested in this phase of the subject, though this will not be of interest to many. In popular language this means that the authors were careful to have the media used to test for the growth of the spores of *Bacillus larvae* suitable for the growth of that organism, so far as acidity is concerned. This was determined by measuring the reaction of normal bee larvae, which are the natural food for this bacillus. As pointed out by the authors, killing the spores of *Bacillus larvae* suspended in water is a different matter from killing them when embodied in masses of wax or other foreign matter, but it is of value to know that the spores were destroyed in less than five minutes boiling in the lye solution when suspended in water.—Editor.]

NOT EXACTLY BEEKEEPING; BUT—

The Bees Greatly Benefited Hank Wetherbee.

HANK WETHERBEE has discountined beekeeping and gone to work. In a statement to a representative of the Star, he said that, while the business as a whole had many points of interest, he had about decided that some sedentary occupation—like taming bulls, or blasting with nitro-glycerine—is much safer and quieter for a man of his retiring disposition.

It was from Mrs. Wetherbee, however, that the reporter was able to gather the full details of the surprising change that has occurred in Hank and his son, Web, and of Hank's sudden determination to dispose of his apiary and carry on the widow Perkins' hen farm.

It appears that some time ago Hank bought a hive of bees from a farmer and set it up in the back yard—with the intention of adding hives as the colony increased until he had a fair-sized apiary; then all he had to do was to put up a sign in front of the house, advertising the honey, and he could sit in a rocking chair on the front porch and dispose of the whole crop without further effort.

He had it all figured out that in 25 years or thereabouts, he would have enough surplus cash to buy the National Bank in the village, and foreclose the mortgage on Bill Prentiss who called him a durned lazy mugwump, back in '82.

Hank had an affliction of the legs and back which he called "rheumatiz." This allowed him to hobble slowly around with the aid of a crutch but absolutely prohibited the use of a bucksaw, hoe or any implement which he had to grasp with both hands and move up and down or sideways with any degree of force or continuity of action.

Web was learning to emulate his father as nearly as he could, but suffered the handicap of not being the possessor of anything closely allied to "rheumatiz." He was tall and loose-jointed, with a foot like a summer squash and a deep and sincere aversion for work, which manifested itself at an early age and grew into a sort of mania as he advanced in years.

It seems that Mrs. Wetherbee had often labored with her husband and son both orally and physically when in need of firewood or help with the washing, and she showed several badly deranged flatirons and a hardwood rolling pin engraved with honorable scars as evidence of her efforts along that line.

Hank and Web up to that time had successfully resisted all her blandishments tending toward manual labor: Hank, by calling attention to his pitifully crippled condition, and also by the skilful use of his crutch in warding off stray missiles; Web, by absenting himself with great speed and diligence whenever it was noticed the conversation was veering toward the dangerous subject known as "work."

A short time ago it became necessary, owing to the natural increase of the colony, to transfer a part of the bees to a new hive; and, as Hank considered himself incapacitated by his infirmity, he handed the job over to Web, but occupied a chair placed at a safe distance so he could comfortably supervise the transfer.

The boy had never had any experience with bees up to that time but felt himself equal to any honeybee that ever flapped a wing; so he draped several yards of mosquito netting over his hat, drew a pair of socks over his hands, and thus equipped, went out with a hatchet and bee-smoker to move a family of about 4000 busy honeybees who hadn't the slightest intention of looking for a new apartment until the first of May. Arriving at the scene of action he squirted a few puffs of smoke into the entrance to let them know the rent was due; then, inserting the blade of the hatchet under the cover, he ripped the roof off and laid bare the domestic secrets of the whole bee family.

No self-respecting colony of bees could be expected to stand having greasy smoke blown in their eyes, together with a sudden loss of their upper story, without getting somewhat "het up" over it, so they swarmed out with a noise like a circular saw and, surrounding Web on four sides, poked their stings hopefully into every hole and crevice in his clothing and glared angrily through the squares in the mosquito netting, daring him, in bee language, to come out and fight like a man.

Web got a little excited when he saw how mad they were, and in trying to sideswipe a few of them tore a gaping hole in the mosquito netting, allowing a handful of enterprising bees to enter and muss up his countenance some.

He wasn't exactly prepared to receive

this indignant delegation in the front balcony, so he dropped the hatchet and started to run; he didn't care much where he went, but he had a steadily increasing desire to get away from there suddenly and with as little fuss as possible. At the far end of the lot was a stone fence about six feet high, and Web was so anxious to let the poor bees have the entire back yard to themselves that he cleared it by a margin of four feet—and never knew it was there.

With great presence of mind he retained the smoker in a vise-like grip, and every few rods he slowed down and sent up a smoke barrage under cover of which he struck off at a different angle and increased his speed several revolutions. Hank had been a witness of it all, and it tickled him so much he couldn't sit in the chair; so, regardless of his "rheumatics," he rolled off on the ground in paroxyms of laughter.

While sitting up and rubbing his eyes after a particularly violent outburst he observed Web headed in his direction, surrounded by a cloud of bees and making better than 20 miles an hour. Hank motioned violently for him to sheer off a couple of points to starboard and run for the open sea, but Web had his steering gear set for the home port, and a convoy of 3500 bees furnished the incentive for a record-breaking trip.

As he flew past, a detachment of the yellow-barred fellows turned their attention to Hank, and that gentleman rose up as though the earth had suddenly been transformed into a red-hot griddle, and, forgetting his crutch and painful infirmity, started for home with the lithe agility of a hungry weasel.

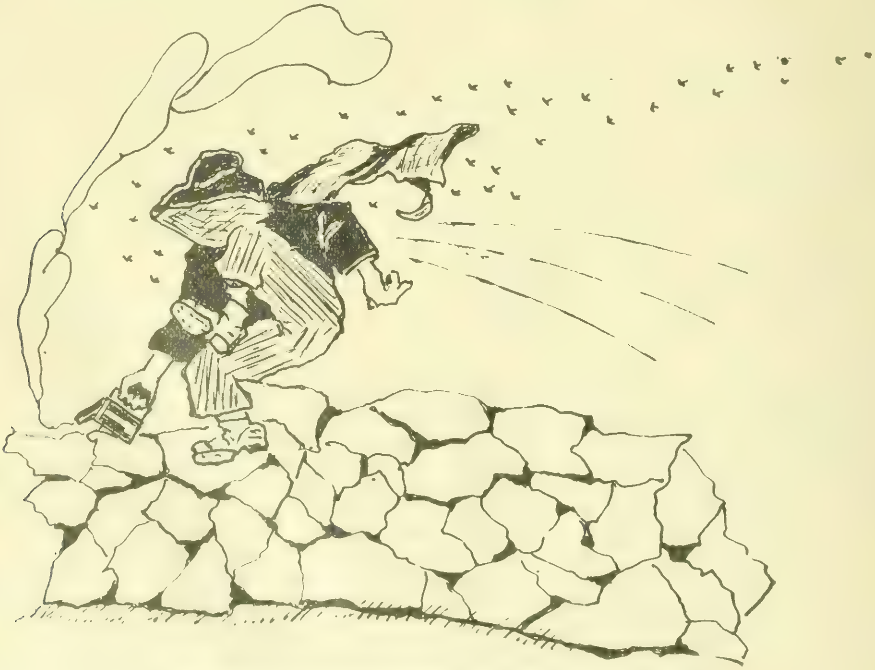
Mrs. Wetherbee saw them coming, and with great forethought locked the door and hid in the pantry. Despite Web's running start, Hank beat him to the house by the fraction of an inch, and Mrs. Wetherbee entrenched among the dishpans had the satisfaction of hearing them alternately beating on the door, and making an occasional rapid circuit of the house, varied now and then by the scuffling of feet and the sound of cuffs and blows whenever they were forced to make a stand to dislodge the ones that had landed on an exposed strip of hide.

After the bees had tired of the slaughter and returned to the dismantled hive, Mrs. Wetherbee opened the door and the beekeepers slunk in covered with angry red lumps and perspiration—both entirely new experiences for Hank and Web.

"Well, you poor cripple, how's the rheumatiz?" inquired the lady, placing her hands on her hips and eyeing Hank sternly; "seems to me you can hobble around quite peart today without your crutch, can't you?"

Hank saw the game was up, so he rolled a swollen red eye in her direction and opined feebly that he felt jest like choppin' up some wood—and Mrs. Wetherbee, watching from the pantry window, saw him bring the crutch and an armful of dry limbs to the chopping block and vigorously reduce them to a large and useful pile of kindling wood. W. L. Clement.

Newburgh, N. Y.

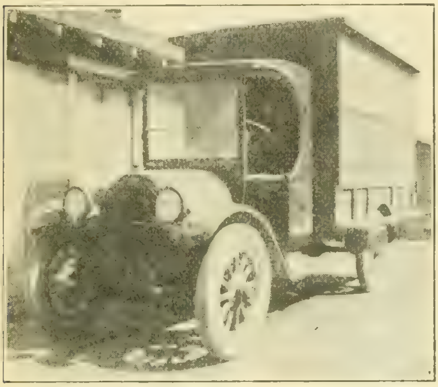


Hank cleared the stone fence with four feet to spare.

FROM THE FIELD OF EXPERIENCE

EXTRACTING HOUSE ON WHEELS

Some of its Advantages Over the Central Extracting Plant



Extracting house on wheels. Completely equipped with Buckeye extractor, gasoline engine, honey pump and uncapping outfit.

I am operating a truck equipped with an eight-frame Buckeye extractor, gasoline engine, honey pump, uncapping outfit, and yet having plenty of room for the operator to work. The honey is pumped into a settling tank outside which is bee-tight. The top on this truck is positively bee-tight and storm-proof. I built this top myself, planning it for conveniences and durability, also comfort for the operator. As will be seen by the illustration, the top has a half curtain, and under this curtain there is a wire screen stretched tight. By raising these curtains the operator is always comfortable, especially with the breeze from the extractor.

I drive this truck up to my yards and in ten minutes we are extracting honey. I have one helper only, but each one of us does a certain part of starting the work and all is done with anxiety to make our usual average per day, which is 50 five-gallon cans between 8:30 to 5:00 p. m., when we clean up and load our honey on this same truck and start for home. I employ one man and produce as many pounds as some men do who employ three and four helpers and haul their honey to a central extracting plant. In this way my truck pays for itself and makes no complaints about the bee-stings.

Another thing to be considered is the breakage on combs while hauling to a central place; and the most important of all is the mixing of combs where foul brood is existing, and I must say with regret that it is found in nearly every location and state I have ever been in. I always put the same combs back on the same colony after extracting. I try not to have over three to five exposed at one time and arrange my supers so as to come out of the truck in rotation as they went in, which can easily be done if the operator inside is careful. This is important, for the most of Idaho is pretty well blessed with foul brood, especially in this section.

I can load 120 extracting-supers at one time and not use a rope or anything else to tie them down, simply closing my doors in the rear end and starting. D. C. Stahlman.

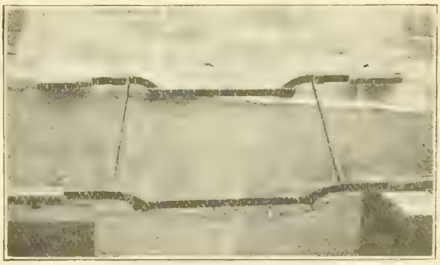
Buhl, Idaho.

* * *

LABOR - SAVING HIVE - LIFTER

A Handy Device for Lifting Off Supers When the Brood-chamber is to be Examined

Have you ever decided, at the close of a good honey season, to requeen your apiary but, as you looked across the rows of hives with their three or four supers each and thought of your poor old back, changed your mind and put off the job till some other time? If you have, do not do it again; but just get your blacksmith to make a machine like the one in the picture, then persuade your mother-in-law or your neighbor's boy to get hold of one end while you hold on to the other, slip it over the top and down to within a few inches of the brood-chamber, then smile as you see those supers suddenly move off and finally back again so gently that the workers in them hardly know they had been moved.



This hive-lifter is slipped down over the hive or the pile of supers, then as the handles are lifted the bars at the side grasp the hive firmly.

The contrivance is made of three-eighths or five-sixteenths inch iron, the hand pieces being 14½ inches long with one end turned down 1½ inches. The side pieces are 17 inches, with the lower part of the ends turned so as to catch the hand pieces when they go below level. This keeps the lifter straight when one picks it up and holds it out for the other to take hold. The cross-

FROM THE FIELD OF EXPERIENCE

pieces are 18¼ inches, besides what is turned back towards the handle to be riveted. These cross-pieces can be made any length to suit the size of hive; but, as the side pieces do not touch when lifting, an inch should be allowed for play. The cross-pieces when handles are level should be five-eighths of an inch farther apart than the hive is long.

Pile of supers supported by the hive lifter. The greater the weight of the supers, the firmer the lower one is grasped by the lifter.

When the handles are lifted the cross-pieces press against the ends of the box, and the greater the weight the tighter the grip. A broom handle may be ripped in two and bolted or riveted to handles to make them round. A contrivance like the above, made on a larger scale, can be used for moving packing cases in spring and fall.

Wanstead, Ont. Thomas Martin.

* * *

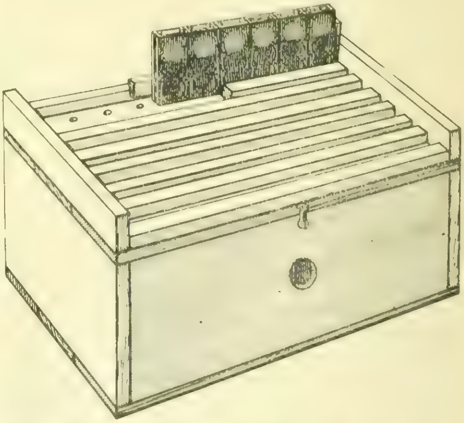
FILLING QUEEN CAGES

Novel Plan for Loading Forty to One Hundred Cages in Ten Minutes

We have made a discovery (or invention, or both) here in my yards, that should tend materially to cheapen the price of queens through reducing the work in shipping. Hitherto it has taken us a long and tedious time to load cages; now, in 10 minutes we can load 40 queen cages with bees. As I can find no mention of any such a device in my available books, I believe the idea is original with us; if so, pray test the matter and pass it on to American breeders if you find it worth while. So far, this season, we have not lost a queen, and every cage has been loaded with bees by our method.

The basis of our plan is this: Bees confined without comb or queen in a dark place accept any queen readily (with exceptions). We have three strong colonies as ''cage loaders.'' Each is in two stories with a queen-excluder and queen below. Great care is taken to allow no drones above. In order to avoid bees too young to travel, no brood is permitted to emerge above the excluder. It is put below when sealed. We have a box with a removable lid. This box has a hole near the bottom with wire cloth inside, and the hole is the right size to shut with a cork. The lid is pierced with 40 holes (or it could be 100) in four rows of 10 each. Between these rows are strips of wood to hold the queen cages upright with their wire-cloth surfaces turned to the light. A wedge device clamps the cages into position firmly. Each hole corresponds to the hole in a queen cage.

About 10 a. m. we go to a ''cage loader'' colony and shake two or three frames of bees into the box. Now jolt all bees into bottom of box and put on the lid with the cages. Open the hole in side of box, and smoke—two puffs of cool, white smoke are plenty, with a puff or two later if the bees lag. As the cages are light and well ventilated and the box dark and full of smoke, there ensues a mad scramble of bees to get up above into the queen cages. We allow the cages to get overcrowded before removing and permit a few bees to escape from each cage if necessary. The cages are now closed, made up into packages of from two to ten, depending on the day's orders, and removed to a dark cellar to allow the bees



Queen cages in position to be filled with bees by the Cannell device.

to "cool off." At 5 p. m. we put a queen into each cage and return them to the cellar until morning. The cages go out in the first mail. I believe this method will allow me to double my output without seriously increasing my work. Each queen has 12 hours rest without jolts, and so far I have received two letters saying how chipper my queens were on arrival. I am well satisfied. Of course, I may be inventing an old plan over again, but I don't think so.

I note in Gleanings, the American Bee Journal and the Bee World that further importation of bees and queens into the United States and Canada is now forbidden. And not a day too soon. With *Acarapis woodi* identified in Switzerland, and probably in France, it is only a question of time until the mite is generally distributed over Europe. I myself have refused several queen orders from America since learning of the discovery of the mite on the continent. * * * * tried to place an order, and I refused it with two reasons given: (1) that better Italian stock can be had in America than in Italy; (2) that the importation of queens should be stopped before bees in America begin to crawl. I certainly am glad that the danger has been reduced now, as all breeders here might not be as interested in American beekeeping as I am.

Skipwith Cannell.

Aux Sieyes, par Digne, Basses-Alpes, France.

[The above is a part of a letter to Dr. E. F. Phillips, which he kindly forwarded on account of its value to queen-breeders at this time.—Editor.]

AN IMPROVED ROBBER CLOTH

How to Make and Use this Important Device. Use of Wet Cloths in Swarming

I often wonder whether beekeepers as a rule fully appreciate the value of a robber cloth when working in the apiary. Also the use of a wet rag or cloth at times.

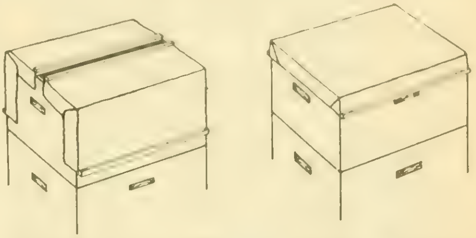
In the A B C and X Y Z of Bee Culture a robber cloth is described as follows:

> Take about a square yard of sheeting or cotton cloth. If the hives are small less will do. Lay one of the edges on a piece of lath, about the length of the hive. Lay a similar piece of lath on top of it. Drive wire nails through and clinch. Treat the opposite side the same way.

Now, isn't that rather large and unwieldy? I prefer the cloth to be two or three inches broader than the width of the hive and about two inches longer than the length of the hive. This makes it more convenient to handle than if larger and is sufficiently large for the purpose.

I bind the two edges between two pieces of light ⅝ x ⅝ stuff which should be no longer than the hive. This allows the free, unbound ends to lap down over the upper edges of the hive ends.

It is well to have three or more of these and a half dozen would not be amiss, for if you happen to have two hives uncovered at once, which often happens, it is much handier to use a cloth than to have to put on the regular cover and then have to remove it again. If robbers are present I use two cloths over the hive I am working with. The first one is rolled back as the consecutive frames are taken out, and the other one is used to follow up and cover the combs that have been examined so that it is only necessary to have a small portion of the tops of the frames exposed, and this need be only while removing or replacing a comb. I have a light box in which eight frames will hang the same as in the hive.


Showing the improved robber cloth as applied on a super.

It has a bail made of a piece of broom handle and two pieces of about ½ x 1-inch stuff. The ends of these are nailed to the end of the piece of broom handle and other ends of them have a nail driven through them and into the box near the top center of the box ends. This allows of the bail being turned down out of the way, when it is not used as a handle. For a cover for this box I use one of the robber cloths, which is much lighter and handier than any tight cover that could be devised.

I nearly always use the cloth or cloths over a hive when manipulating, even if robbers are not abroad, for the bees in the hive are easier to keep under control than without it. Even with a very gentle colony there are usually just a few vicious bees that are ready to pop out suddenly and sting.

If the cloths are wet or dampened it is better, for then they lie closer to the hive edges and if there is wind blowing they will not flop around so badly. To make them still more efficient it is not a bad idea to sprinkle the cloths with a 10 per cent solution of carbolic acid.

I also find a wet cloth large enough to roll or fold up and close a hive entrance quite a convenience. In swarming time it is well to have a few of these lying around handy and even a few smaller rags. If swarms come out faster than they can be cared for, just grab a wet rag and cram it into the entrance. This will not kill or injure many bees, and it will give time to take care of the swarms already out. If the weather is

FROM THE FIELD OF EXPERIENCE

not too hot they can be left closed up until there is more time to attend to them.

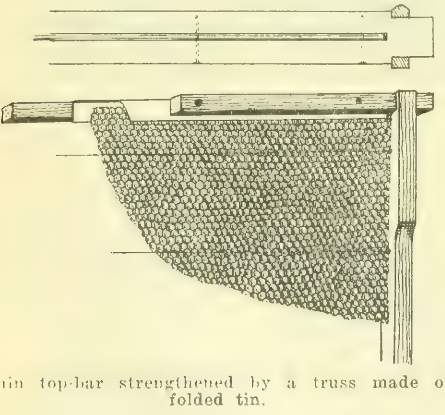
If robbers have discovered an opening between the hive and the cover, wet a large cloth and throw it over the hive so that it will hang over and close the crack. A portion of the carbolic acid solution, which should be kept in a Mason jar, applied to that portion of the cloth where the robbers have been entering will tend to discourage them. S. E. Miller.

Rhineland, Mo.

SAG PROOF THIN TOP BARS

A Metal Truss of Folded Tin Embodied Within the Top Bar

I was much pleased with the article of Morley Pettit on page 87 of the February Gleanings, in which he advocates a thin top-bar. Only I shall go him one better, as I am planning to make all my frames with a ⅜-inch top-bar. Of course, some one will get up and say: "They will sag." I will answer: "No, they will not when I get done with them." I am preparing machinery to make them with a slot cut through the center of the top-bar of the frame lengthwise, excepting about one inch at each end, using a saw that will cut nearly 1-12 of an inch kerf. Then I shall use a strip of tin cut about one inch wide, and folded lengthwise through the center, but leaving the edges about ⅛ inch open, the tin strip to be about ¼ inch shorter than the inside of the frame. Then when I put in the foundation I insert the folded tin in the slot just lightly and insert the edge of the foundation in the fold of the tin, and with a block of wood force the tin and foundation clear through the top-bar. Then I drive about four ⅞-inch brads or small wire nails down into the edge of the top-bar through tin and all. Such top-bars do not sag, and the edges of the tin can be crimped so that it will be impossible for the foundation to pull out. I can also recommend the above method of fastening those wood center combs H. H. Root tells us about on page 79, that is, for those who prefer thin top-bars.



Thin top-bar strengthened by a truss made of folded tin.

Biddle, Mont. E. W. Powell.

SOURWOOD UNCERTAIN YIELDER

Like Basswood it is Extremely Sensitive to Weather Conditions in Nectar Secretion

In the bee journals there is mention made quite often of sourwood honey and its high price and rare quality. It may seem to one who lives in a section where honey brings only 12c a pound that we mountain beekeepers are certain to get rich in no time.

For example, without advertising, I sold my entire crop to the consumer this year at $3.50 per 10-pound pail. This was all the sourwood honey that 100 good strong colonies of Italian bees made. But it was only 1100 pounds. Other good beekeepers in the same section had only enough honey gathered to supply the bees.

Once in a few years the sourwood yields an enormous amount of honey, but the flow is never more than five weeks in duration. Honey may be coming in as fast as the bees can go after it, and there may be a profuse bloom on the sourwood trees, but day after tomorrow the bees may be robbing, because the weather-man has pulled the wrong lever for the beekeeper. In another day or two the flow may come back to some extent, but it will not fully recover. It is highly probable that the bees will gather no more than a living, after the honey flow has failed once, except in case of excessive rain. The blooms are not often damaged by rain, and sunshine starts the nectar again. The queer thing about it is that often the beekeeper does not know what caused the failure.

So when I read about the long honey flows, and harvesting honey by the carload, I wish I were there. I believe that it takes more careful beekeeping here in the mountains to make a success of honey production than in most localities. If we miss sourwood, we have no salable crop.

My crop is generally about half bulk comb honey, and half extracted. The price is the same. The demand for extracted grows faster than that for bulk.

The "skyscraper" hive is unknown here, but I suppose that where it is known the skyscraper price is unknown. If I can't have an average of three supers per hive, all well filled with honey, I can get as much for my one super as my brother beekeeper in the clover belt gets for his three, and feel that it is worth what I get for it. As long as it is so, I think that we should both refrain from kicking.

Hendersonville, N. C. J. J. Slattery.

SIFTINGS

J. E. Crane

IN making beeswax this spring I found I had 45 pounds of propolis from the scrapings of last year's sections, from which we made 11¼ pounds of beeswax. It pays to make it up, but it is well to leave it till the last, as it sticks up the press and ruins the strainer. Or perhaps better still, mix it with old combs to be rendered.

* * *

Swarming is the earliest here I have ever known, and the outlook for a good yield of honey is the best ever.

* * *

On page 384 Grace Allen tells how she sorts over her combs before the busy season comes on—a practice that will well repay any beekeeper who cares to make the most of his bees.

* * *

Doesn't "The Clover's in Bloom" cover page of Gleanings for June look good? I believe there are few more beautiful flowers when massed to cover acres than alsike clover. I noticed last evening that the locust was also in bloom. Locust and alsike come with us about a week before white clover.

* * *

On page 390 Morley Pettit offers a plan to control swarming, that "never fails." Well, I am of the opinion that it comes as near to it as any plan, but suppose we overlook one of those little queen-cells as we sometimes do. With beekeeping as with a good many other things, "Eternal vigilance is the price of success."

* * *

Fifty-two years ago last winter I made fifty large double-walled hives and two years later I made seventy-five more. Nearly all of these are in very good condition, and in use today. For many years I kept the covers painted, but lately I have found a covering of good roofing paper cheaper, costing about 25 cents a hive or a section of honey and will last from 10 to 15 years.

* * *

"Eucalyptus groves make good windbreaks," we are told below a California picture on page 369. By the way the trees are bent in the picture I should think those California beekeepers would need all the protection from the wind they can possibly secure. It is a good rule never to locate a yard where there is likely to be wind enough to blow covers off.

* * *

On page 378 Jay Smith throws some light on the cause of those "cataleptic queens," and it is quite possible he is right. We occasionally run across a queen with a leg paralyzed, and so far as we can see wholly useless. I have been accustomed to think these paralyzed legs come from having been stung, but it verges on the marvelous to think that a queen can stand a sting that would kill a worker. The greater vitality of the queen that enables her to live two or three years may account for it, enabling her to outlive a sting that would prove fatal to a worker.

* * *

A letter recently received from Lewis J. Elwood announces the death of his father, P. H. Elwood, on May 10. Mr. Elwood has been one of the large and successful beekeepers of the state of New York for the past 50 years. He was much more than a successful beekeeper. Beneath an unobtrusive exterior he possessed a strong, lovable, Christian character that will long be cherished by those who knew him.

* * *

"Thou shalt love thy neighbor as thy self," is a rule as beautiful as beneficent. Like the laws of light it is a universal law. It always has been, it always will be the moral law of the Universe. Its negation always has brought and always will bring discomfort, sorrow and suffering. It matters not whether one nation tries to rob another or one beekeeper starts a yard of bees close to another who has already all the field will bear.

* * *

The discussion of the "Cause of Swarming," by Geo. S. Demuth, is of unusual interest at this season. Among the many things that induce swarming is "congestion of the brood-nest," and this, he says, may occur with an abundance of room in the super, for room alone is not sufficient, but the bees must be induced to occupy it, a fact we are inclined to overlook. I remember, years ago, my sad experience with a yard of bees several miles from home. I thought if I gave enough room they would not swarm, and as I was going to produce extracted honey I gave them the room; but they swarmed very freely, in spite of a nice set of combs above the brood-chamber, many of them without storing any honey to speak of in the super. Later, I called on a number of beekeepers that had been very successful in preventing swarming and almost my first question was, "How do you keep your bees from swarming? I believe every one said that when putting on supers they always raised up some brood from the brood-chamber to the super, to induce the bees to occupy the extra room given them. I tried it and found it a great help.

WESTERN NOTES

CONSTANCE ROOT BOYDEN
(Stancy Puerden)

MY orders are to go on writing about the Golden West. There, if the editorial staff should see that they might say, "What does she mean? we never gave her any such orders." Quite true, gentlemen, and you may save yourselves the trouble of indicating your preferences excepting by forwarding subscribers' comments, for the readers are the ones I always try to please. And judging from what the nice westerners tell my nearest man relatives I have been successful as far as they are concerned, even if I am a very new Californian. And eastern readers also seem to approve, some because they like to read another's impressions of what they have seen and enjoyed, and others because they are interested in what they hope to enjoy in the future.

If these articles have been confined to Los Angeles County exclusively it has not been from choice, for I love the whole great West and hope to see much of it before my time comes to "go west." But I have been afflicted with a frightfully busy husband the past few months, so busy that he has not even had time to take little motor trips among the beekeepers of this region, trips on which he has promised to take his wife. If "Hope deferred maketh the heart sick" it is a wonder I haven't a chronic case of heart trouble.

DURING these May days in southern California I have been wondering if the tourists who come here only for the winter months do not miss the most exquisite weeks of the year. Owing to the great amount of rain during the past winter no doubt the flowers are much finer than usual, but for weeks back nature has seemed almost wickedly extravagant. Certainly she is extravagant in roses. The grounds of fine estates, the homes of those in moderate circumstances and the tiny yards of the smallest bungalows are abloom with such roses as we see only at a florist's in the East. Pergolas are heavy with them, miles of wire fences along orange groves are draped with them, garages are hidden by them; there are hedges of roses, borders of roses, and the air along the boulevards is sweet with the combined fragrance of roses and orange blossoms. It seems almost a pity that nature should put forth so much effort to produce beauty that is so fleeting, for the most perfect rosebud lasts such a short time. There is a pergola roof over the south half of the porch of this Pasadena house, where we are living temporarily, and often the fallen rose petals are so thick that one cannot see much of the porch floor, and if every petal is swept off, within 20 minutes there is another rose petal carpet. In the East we used to save rose petals for rose jars and rose beads. In our new home next year I think we shall start a rose petal compost heap and feed it back to the rose bushes.

And nature is almost equally extravagant with other flowers, wistaria, pansies, fragrant stocks, snapdragons, blue larkspurs, stately foxgloves, irises of all varieties, brilliant Transvaal daisies and so many interesting flowers that are new to me. And on the mountains and in the canyons are gorgeous and wonderful wild flowers, but lacking a nice botanist like Mr. Parks, who helped me in Texas last year, I cannot name many of them yet.

IN a state where flowers are so plentiful it is not surprising that honey is abundant, is it? But, honestly, it is amazing to see the extent to which honey is sold along the boulevards. It is a wonder to me that city groceries and provision stores can prosper when I see the number of booths and stores out in the country in every direction in which one can buy fruits, vegetables and honey, always honey. Some of these stores keep a general stock of groceries; some of them advertise home-baked foods and marmalades; some display rabbits and poultry; many of them sell ice cream cones, Eskimo pies, cold and hot drinks; but all of them, large and small, display honey. We stopped at one open-front store on the Foothill boulevard to buy oranges, and noticing the display of honey, the men of our party fell into conversation with the proprietor and found that he was a beekeeper with some 500 colonies of bees back in a canyon.

But in many cases the honey sold at these boulevard country stores is bottled by some firm in the city, and the proprietor of the store may not recognize a honeybee when he sees one. This just goes to prove that honey is becoming fashionable, which is a great thing for the beekeeping industry. At one of these wayside stores east of here, on the Valley boulevard I think, honey orange marmalade is featured. Some day I must buy a jar and find out whether it is as good as the Stancy Puerden variety.

The finest macaroons I ever tasted are the Honey Cocoanut macaroons which we have frequently bought in various stores in Pasadena, and were delighted to find them in the corner grocery near our future home in Alhambra. They are not too moist or sticky, as one might suppose they would be, but are exceptionally fine flavored, tender and yet with a "chewy" consistency. By carefully hiding them we have kept them in good condition for a week or two. They are neatly put up in waxed paper bags holding a dozen each and sell for 15c.

Several times, when out walking, I have caught a glimpse of a delivery wagon with the words "Honey Bread" on it, but have not been able to locate any of the bread yet. Honey would add greatly to the delicious raisin bread for which this part of the country is famous.

In the April issue of Bees and Honey, the official organ of the Alameda Beekeepers' Association, it is suggested that honey producers adopt the slogan "Eat it with Honey." That is a fitting accompaniment for "Say it with Flowers" or "Say it with Music," and has my heartiest endorsement. As I have so frequently said on this page, I dislike to have the public urged to use honey indiscriminately in cooking. It is degrading a delicious table sweet to the level of a cheap cooking syrup.

ONE day when my sister and I were climbing into the automobile of a real estate agent to go house-hunting I remarked, just to make a little conversation, "We beekeepers are hoping for some sunshine." You ought to have seen that man's face light up. Instead of getting into the driver's seat he came back and leaned over the side of the car and began to ask us questions. When he found out we were daughters of a beekeeper, wives of two more, sisters of two more and that our bread and butter had always come from the beekeepers' supply business he seemed to regard us as old friends instead of prospective customers. I suppose he should be classed as one of Mrs. Allen's enthusiastic "sideliners," but I predict that the real estate business is going to lose a man and the beekeeping industry will gain one soon.

He told us some interesting stories about how he acquired most of his bees. It seems California bees are like some of the rest of us in this part of California: they have their difficulties in finding a place in which to go to housekeeping when they decide to swarm. For that reason they have a habit of entering human dwellings uninvited and the average owner finds difficulty in evicting them. This real estate agent once removed a colony of bees from a house, a friend of the owner heard of it and requested his services, others heard of this and so his fame spread. He has removed bees from frame, stone, stucco and brick residences and from factories and other buildings. California is rather deficient in hollow trees, and it is for this reason that bees enter dwellings and not because they are any more fond of human society than eastern bees. One day a husky policeman came down to our office in Los Angeles and begged for help in evicting a colony of bees from his home. Doubtless he was a brave man when dealing with lawbreakers, but he admitted his timidity when dealing with the temperamental little honey producers. We hear of so many similar cases that we call them the "unwilling beekeepers" of California.

BEING some three thousand miles from the Gleanings office it is a little hard to cut my page to fit. The following recipes were prepared for the last issue, but were crowded out.

Devil's Food Cake.

⅓ cup shortening
½ cup brown sugar
½ cup honey
2 squares melted chocolate
1 teaspoon vanilla
2 eggs
⅔ cup thick sour milk
1½ to 1¾ cup sifted pastry flour
1 teaspoon soda
2 teaspoons baking powder
⅛ teaspoon salt

Cream the sugar and shortening until smooth and then work in the honey and the chocolate which has been melted over hot water. Add the vanilla, beat in the eggs and then beat with a Dover egg beater until thick and fluffy. Add the sour milk and the flour, in which the other dry ingredients have been sifted, a little at a time alternately until all of both have been used. The batter should be as thick as ordinary cake batter, and as the amount of moisture in flour varies it is impossible to give the exact amount of flour. Bake in a moderate oven 30 to 40 minutes. Frost with the following frosting:

Easy Chocolate Frosting.

1 cup pulverized sugar
2 or more tablespoons hot water or coffee
1 tablespoon butter
1 square melted chocolate
½ teaspoon vanilla

Soften the butter and work into the pulverized sugar, adding the hot water a little at a time; then add the melted chocolate and the vanilla, stirring until smooth. This may be prepared while the cake is in the oven, putting it in a warm place until ready to use it, when a little more hot water should be added if it is too thick to spread easily.

Ginger Cookies.

1 cup shortening
1 cup dark-brown sugar
1 egg
1 cup honey
¾ cup thick sour milk
1 teaspoon soda
1 teaspoon baking powder
2 teaspoons ginger
1 teaspoon cinnamon
1 teaspoon salt
4 or 5 cups sifted flour

Cream together the sugar and shortening, beat in the egg and then the honey. Add a little of the sour milk and then sift in a little of the flour in which the other dry ingredients have been sifted, continuing this until all the sour milk has been used and enough flour to make a dough which can be handled. Roll out, cut with a cooky cutter and bake in a moderate oven. This will make 60 or more fat cookies which will keep well, if the family permits it.

Steamed Brown Bread.

1 cup sifted white flour
1 cup cornmeal
1 cup graham flour
2 level teaspoons soda
1 teaspoon salt
¾ cup honey
2 cups thick sour milk
1 cup seedless raisins

Wash the raisins and steam until plump, cool and dust lightly with a little of the flour. Mix and sift the dry ingredients together and add to the honey and sour milk which have been stirred together, adding any bran which remains in the sifter. Stir in the bran and steam two hours or more in three one-lb. baking powder cans which have been well greased and dusted with flour. The loaves may be put in a moderate oven for five minutes to dry them off after steaming. When done stand the cans on a folded towel, which has been wrung out of water, for a few minutes, run a thin knife around the edge and turn them out on a wire cake cooler.

Mock Macaroons.

2 egg whites
¼ cup gran. sugar
¼ cup honey
½ cup shredded cocoanut
2 cups corn flakes
⅛ teaspoon salt
½ teaspoon vanilla
½ teaspoon almond

Beat egg whites until stiff and dry, add gradually the sugar and then the honey, beating constantly. Then fold in the corn flakes, cocoanut and salt which have been mixed, add the flavoring and drop from the tip of a teaspoon on buttered shallow pans. Bake in a rather slow oven.

All measurements level.

Beekeeping as a Side Line

Grace Allen

WHAT temperamental things swarms are! And in a season like this, when swarms were so frequent—I speak for myself, John—these individual characteristics are particularly, often painfully, noticeable.

One Saturday afternoon in spring, we were pleased to have Porter Ward of Allensville, Ky., visit us. It was a cool damp day, and after hanging around the beeyard till we got chilly, we went back home and settled down to a blazing wood fire. The telephone rang; a big swarm on a hackberry tree, was the message. Over we went, the three of us. Mr. Allen manipulated the swarm-catcher, the swarm hanging high. But it was late and cold. The bees that did not get into the basket stayed where they fell, chiefly on shoulders and ground. While looking for the queen among those on the ground, I pushed them about a bit with my fingers. Up went little bodies, wings waved wildly, and up my sleeves they started. I thought that was funny and let them go on. But the end of that swarm was fiasco. Those dumped in front of a hive went in most indifferently or not at all; those on the ground—and that was a large proportion—stayed where they were. There were bees on Mr. Allen's coat and in it; on his vest and in it; on my coat and in it—up the sleeves above the elbow so that I dared not bend my arms till the coat had been gingerly removed. They were not particularly sting-y, just crawly and unmanageable. So we gave up, most chagrined that Mr. Ward—with his unswarming hives!—should have seen so fizzly a job. The next morning we went over to complete it. It was scarcely finished, when out came another swarm. A clipped queen this time, and there she was, right where she was supposed to be. We slipped her into a cage, and changed the hives in approved orthodox style; back came the swarm, we ran the queen in and O. K.'d the job. Now if Porter Ward could have seen that, Mr. Allen was saying, when —"here comes another," I cried. Another clipped queen, easily caught, caged, hive changed, swarm returned, queen run in—everything working as though recently oiled. Again we sighed for a spectator, especially Mr. Ward, who had been the sympathetic witness of our discomfiture. And again, a third time, came a swarm and we worked the clipped-queen-and-changed-hive system. And thought of the crawly swarm of Saturday.

As not all our queens are clipped, we don't know, when we find a swarm already out from who knows what hive, whether the queen is with them or not. So we assume she is, and catch the swarm. Or try to. Yet at that, how successfully, even by myself, I secured two or three such a few days after Mr. Ward's visit. Several times I used the thrilling process of a bushel basket on top of a stepladder. And then climbed as gracefully as the basket of bees allowed back over the fence, from the orchard to the beeyard.

The facts about our excessive swarming were these: the bees had honey left over from the fall before; spring came early; I came late. And even after I finally started the apiary work, the world was so full of a number of things that the bees got crowded pretty well off the program. Probably I have never given them so little attention, hive after hive. So here are the morals for newer sideliners.

First, start your spring work early. It is very important.

Taking his ease among his bees.

Second, do not increase the number of your hives beyond the limit that you can care for successfully and satisfactorily. If you have some half dozen other pressing and delightful interests, as some of us do have, hold your yard to a size that you can handle, and be satisfied with your own work. Apologizing for one's work is not stimulating.

Third, it pays to clip your queens. That is, unless you have hives or systems of management that convince you that your bees will not swarm. It is true that, if the beekeeper is not present when the clipped-queen swarm issues, he cannot turn the pretty trick of changing hives while the bees are out. But he will know that no swarm will go away. If, having tried it two or three times, in his absence, they finally destroy their queen, he will have lost only her, instead of both her and the bees. And the few days' delay before a new queen is ready to go out may enable him to discover their condition and do something about it.

By what different ways do we approach our beekeeping careers! One has a hive given him, one—O favored one!—is born into a beekeeping family, many inherit apicultural leanings from grandfathers or uncles who kept bees in the good old ways of the good old days, some glean the desire from the printed page, and some enter into the apiary through the interest of a friend, or a husband, or a wife. Some, in the old, inevitably adapted words, are born to bees, some achieve bees and some have bees thrust upon them.

The sideline beekeeper shown herewith reached his hives by the wife route. For it was his shorter and plumper half who first became interested. And she? She got her germ in a poultry journal! Being a bit thorough-going by nature, she was reading all the bulletins and journals she could digest, to learn how to keep chickens right. In one particular journal, on a particularly momentous day, she read a chatty article by a backlot chicken-lover, who concluded by suggesting that poultry-raisers might well widen their back-yard activities to include various other things—among them, a hive of bees. One needn't do any work, he assured his already busy readers, the bees would do it all. They would—'tis a familiar heresy—work for nothing and board themselves—and in due season the chicken fancier could go out with a pan and a knife and get his honey. Just so.

That sounds good to me, said Friend Wife, let's get some bees. Where do people get bees, they began asking their friends. Nobody knew. At last, at the State Fair, the lady found a beekeeper exhibiting his wares. Will you sell me some bees, she asked. I will do anything I can for you, he answered; I will take a quarter from you and send you a trial subscription to Gleanings (whatever that is, murmured the lady); but I cannot sell you any bees. That was in September.

''Friend Wife's'' banner hive came out second.

All winter long, though she had never seen the inside of a beehive, the lady read Gleanings. She had no idea what manner of thing a brood-chamber might be, or a ripe cell, or a shook swarm, or a queen-excluder. Like Sanskrit sounded such phrases as laying workers, foul brood, royal jelly, failing queen. But she read on—it was what she had spent her quarter for. And at last, just as winter was leaving the earth, the man remembered having once known, long ago, a man who had talked about bees and died. So he looked up the dead beekeeper's family and found a fourteen-year-old son who would sell him a hive of bees for $5.00. Thus he became a sideline beekeeper.

To such good purpose had Friend Wife read Gleanings all winter that on first opening this hive, the first one that either of them had ever seen the inside of, they found their queen; and the lady clipped her. Soon two of them were reading. That summer they had a swarm—100% increase. Year after year they increased a little. And when they had reached the noble proportion of 50 hives, they made a division. These shall be yours and these mine, they said to one another. The man, however, worked in an office all day. So he took the smaller half. These he works on Saturday afternoons, weather permitting, or Sunday mornings.

The bees in the keg stored about 75 pounds of honey. But the tall one was the banner hive.

One of his interesting experiences was when, against the advice of Friend Wife, he bought a colony of bees from a negro man. They were in a ''kaig,'' and he brought them to the yard one night, in a sack. Then closed the entrance by tacking a piece of roofing tight across it. He fitted an old bottom-board over the top and set thereon a shallow super. Then another—and another. The bees stored 75 pounds of beautiful white honey in his supers. But he did not succeed in getting his shy, elusive queen to occupy them, as he had planned. So one bright day in midsummer, with his permission and several assistants, Friend Wife transferred them for him in strictly orthodox style.

His bee work means much to him, says Mr. Allen. (Yes, his name happens to be Allen, too—and a very fine, rare man he is—and his bees are on Abbott Road in Davidson County, Tennessee.) They bring him some financial return, of course; but out of all proportion to this or to the work put in, they bring him recreation after long hours in an office, and provide him with an absorbing out-of-door interest. He is thoroughly progressive in his methods, though his limited time necessarily forces him into many short cuts. For, in addition to taking complete charge of his own hives, he courteously assists his wife with hers when supers get heavy. He works hard when he works, but he also spends many a pleasant hour of relaxation among his bees.

FROM NORTH, EAST, WEST AND SOUTH

In Southern California.—The month of May was probably one of the busiest months ever experienced by southern California beekeepers. Especially was this true of the latter half of the month. Extracting began about May 20, with most beekeepers who had bees that had access to the sage and orange. Many beekeepers report bees flying to the black sage and ignoring the orange, when in reach of both. Other localities where the orange was the only source of honey report a very light surplus or none at all. The sages are yielding very well and will likely continue throughout the month of June, weather conditions remaining favorable. All in all, the prospects are good for an average crop of honey in southern California.

Prices of honey are not fixed yet, many beekeepers preferring to wait until the entire crop is made before selling. Buyers have not seemed at all anxious to rush things, although several inquiries have been received, with purchasers wishing to know what the producer would sell for. The orange honey crop is sure to be a short one this season and should command the top market price.

Reports from an old resident of Ventura County, in the Western Honey Bee, are very discouraging for that locality. One large producer in Riverside County wrote two weeks ago that it looked to him like a two-case crop (240 pounds) per colony. But this man is an exceptional beekeeper and will produce nearly twice the general average almost any year.

Disease is well under control, and in only a few instances has it proven a serious obstruction to honey production. Utah beekeepers, who annually ship north after the orange flow is over, are getting ready to migrate from the eighth to the fifteenth of June. They are to ship mostly increase made this year, with all young queens and principally newly drawn combs and new hives and equipment. Nuclei that were drawn out a month ago are now quite good colonies, and the colonies from which they were drawn are apparently as good as any in the yard. Some beekeepers claim that they can make 100 per cent increase and still get the honey crop, and with good strong colonies it seems to be possible. This has proven to be one of those seasons where it was profitable to have a large supply of drawn combs on hand. Many colonies have filled three, four and as many as five supers with nectar before any were capped and ready to extract.

The writer heard a very entertaining and educational talk at a Knight Templar meeting on the subject, ''What is it all about, anyhow?'' When we see a picture, as we did today in a bee journal, illustrating a beginner's outfit, in which is a beehive containing frames with one-inch starters of foundation, it makes us wonder what all of this talk of full sheets of foundation is about, anyhow. With our years of experience trying to weed out all of the drone comb we can, and then to teach beginners to use starters—to say the least, ''Is it consistent?'' L. L. Andrews.

Corona, Calif.

* * *

In Oregon.—The general indications are now that there will be a normal, if not better than normal, honey crop in the Northwest. In spite of the fact that there was a very heavy winter loss and a very late spring, the bees have built up fast in the last month and are in exceptionally good condition for clover in the valley. The honey flow from maple, fruit blooms and dandelions came almost simultaneously during late April and early May, and, as a result, many of the stronger colonies stored considerable surplus beyond their needs and have built up in nice shape for later honey flows.

The attention of all beekeepers in the Northwest has been called to the summer field meetings which are to be held as follows: June 15, North Idaho and Spokane district; June 17, Yakima district; June 20, Northwestern Washington; June 22, Southwestern Washington; June 24, Portland; June 27, Albany; June 29, Redmond; July 1, Hermiston; July 3, Ontario (?).

Arrangement has been made whereby it is expected that several out-of-the-state speakers will take in the series of summer field meetings.

There seems to be very little honey on the market and the price is holding up well. With the general business condition getting back to normal, it is probable that next year's honey crop, though likely large, will move in a normal way.

Corvallis, Ore. H. A. Scullen.

* * *

In Wisconsin.—As shown by other reports, a rather high per cent of colonies was lost during the past winter. However, it should be noted that this situation was more or less local. The beekeepers in the northern half of the state did not suffer as serious losses as those further south. All reports indicate that on June first the bees were in better than normal condition, most colonies having reared an abundance of brood. The clover was rather badly injured in the southern part of the state, and this may cause production to be below normal.

Present indications are that the nectar-secreting plants in the northern part of the state are in prime condition, and, as we have had an abundance of rain, our northern beekeepers should get a bumper crop. It is interesting to note that white clover is

FROM NORTH, EAST, WEST AND SOUTH

blooming profusely at this time, which is two weeks ahead of normal. Flower buds on basswood are quite large, and it is likely that the bloom in the vicinity of Madison will come on before the first of July.

There is little local movement of honey at this time, and a few beekeepers still have from 500 to several thousand pounds to dispose of. In spite of the beekeeping slump of last year, most of our beekeepers are attending the local meetings, and the attendance this year is considerably better than was the case in 1921. H. F. Wilson.

Madison, Wis.

* * *

In Texas. The weather of April and May has been as extremely wet as that of February and March was dry. With the rains came cold northers and continued cloudy weather. Some beekeepers lost colonies in the flood, and hardly an apiary escaped heavy loss from chilled brood. The only men not reporting large amounts of chilled broods are those who did not examine their bees during this time. While the loss of bees was great, it was offset by a much improved condition of the honey plants. Horsemint and gaillardia, which promised nothing, so far recovered as to give fair flows. Mexican persimmon, guaucan and valley sage were better than usual. Huajilla was killed back by frosts in March and made about one-fourth of a crop. For the first time in many years the mesquite gave a fair yield from the April bloom. Reports from over the state show the crop to date to be very spotted, some localities showing above normal and others having nothing at all. Conditions at present are such that no prediction can be made on future honey flows.

As stated in this column three months ago, the writer is in the process of establishing an experimental bee laboratory near San Antonio. This will be the headquarters for all bee work done under the State Experiment Station. As this work was formerly done at College Station, the change of location calls for the moving of all the bees and laboratory equipment and the construction of suitable buildings. The bees were moved in April by truck. The distance to be hauled is about 175 miles, but because of floods over 500 miles had to be covered to make the trip. The bees were caged four and one-half days and had the rough ride of their lives; but, strange as it may seem, only a few combs were broken down and few bees and no queens were lost. The first time the writer feels funny he expects to write a dissertation on being stuck in the mud with a truck-load of bees and 200 miles of mud ahead.

One of the prominent beekeepers of southwest Texas has always said: "When the Mexican persimmon blooms we have a catsclaw honey flow." The above statement was true this spring. Large amounts of the early spring honey, which is commonly to come from huajilla, this year came from valley sage, guaucan and Mexican persimmon. Where the bees were in good condition some large averages were taken very early. One party took 40 lbs. average from 250 colonies on April 23. Another, 27 lbs. from 100 on April 18. Were it not for cloudy weather and rain, a crop could be obtained every year from these early blooming plants. It costs little to keep the bees in good condition; and if an extra 20 lbs. of bulk comb is added to the crop but once in five years, it will pay for the work.

From the advertisements it appears that there is an epidemic of price-cutting when it comes to queens. The men who sell queens at 65 cents a head certainly do not make much. The prices on the queens raised in the state yard are going the other way. In the coming year they will probably be double the price asked now. The queens are the excess produced in experiments in selection of heavy honey-producing strains. The result obtained are such and the demand large enough to warrant the change of price next season.

San Antonio, Texas. H. B. Parks.

* * *

In Arizona.—The months of April and May have proven as favorable as was hoped for in southern Arizona, with the result that colonies have come through the critical spring period in generally good condition. Catsclaw and mesquite began to blossom about Tucson by the middle of May and now (June 6) both are in full bloom. The bees are working both plants for nectar, but are much more abundant on the catsclaw, indicating a probability that the honey will be of good quality, somewhat above the average for the so-called mesquite honey. Mesquite honey, in the writer's opinion, is practically always a mixture from these two most abundant and important native sources of nectar, the relative amount of each in the mixture varying with the season. In addition to the fact that bees are working more on catsclaw, it is a very noticeable fact that this plant is blossoming much more profusely this season than is the mesquite.

Conditions within the hives indicate a good flow in quantity and bear out the above-mentioned probability as to quality. Local supplies of old honey are about cleaned up, and new honey is appearing on the local market. Some of this is light amber, evidencing a mixture of early wild flower or mesquite nectar, while some is nearly white, the latter doubtless derived almost wholly from catsclaw. Market conditions appear to be favorable.

Tucson, Ariz. Chas T. Vorhies.

FROM NORTH, EAST, WEST AND SOUTH

In Utah.—In northern Utah and southern Idaho the winter was much more severe than usual; deep snow and continued cold lasted for months, and the winter loss of bees was greater than last year. Spring was late but opened very favorably for the bees, fruit, dandelion and willow blooming profusely and yielding well. Swarming began in May, but the weather turned dry and cool about the twenty-fifth of the month, so we are now having a lean spell during the interim between the spring bloom and alfalfa, which will be on in ten days more.

There is not so much sweet clover as last season; but the alfalfa weevil seems to have worn itself out, so the condition and acreage of alfalfa are at least 120% above the last five-year average.

The law in Utah, compelling people to keep their bees in modern hives, is being enforced, and many box-hive men are selling their old box hives at $2 each, rather than buy supplies at the present price. This will help to remove the menace from American foul brood.

Last year's honey crop seems well cleaned up in this section of the country. There is some local inquiry even this early. Our local markets have greatly improved since the war. I have a local market that will take at least 20 tons. M. A. Gill.

Hyrum, Utah.

* * *

In Indiana.—Since writing the last time and giving such emphatic warning to every one that they must feed or lose their bees, conditions have taken a turn for the better, and the fellow who depended on luck and didn't feed his bees came out all right after all, for we have had the most favorable spring I have ever seen in Indiana for building up weak colonies and favorable also for colonies short of stores.

The failure of the pollen early in the season caused brood-rearing to begin late; but, when the peach orchards in this part came into bloom, brood-rearing came on with a rush and colonies are in splendid condition. Everything seemed to yield nectar this spring—peaches, pears, apples, tupelo and the tulip tree; but, when the time came for the bloom of alsike and white clover, these refused to give up their nectar in more than a light stimulative flow.

The aphids are extremely bad in the orchards, and the oak trees are covered with them. We therefore had a steadily stimulative flow from honeydew. Many who keep colonies in the regular single-story eight-frame hive report from 75 to 90 per cent swarming. My Jumbo hives or two-story ten-frame have cast no swarms except one or two superseding ones. Sweet clover is just coming into bloom, and it promises the best crop in years. Those who have managed their bees properly and kept down swarming, have colonies exceptionally strong. However few have done this.

I am running a small outyard about three miles away where there are several hundred acres of sweet clover, grown for seed. Some of the colonies were so strong that it was necessary to put on three supers before any honey was coming in, but now that the flow is on it keeps one busy putting on supers. If the weather is as favorable as it promises, I shall have more to say later about this experimental outyard. So far the weather has been ideal in every respect for the growth of smartweed, and the prospect is bright for a big crop, although a few weeks of hot, dry weather in July and August can change this prospect very suddenly.

There are a few trial patches of Hubam clover which the beekeepers in this vicinity are watching with interest. As it has had so much said both for and against it, we all want to see for ourselves. The question of overstocking is one of the most baffling of all questions. As far as I can tell at present, my bees in the home yard seem to be working as well on the sweet clover in a field three miles away as the ones are that I have moved right down in the center. The ones in the field certainly have a big advantage over those that have to carry it three miles if they only know it; but many of them seem to think there is better picking a couple of miles away, for they circle high in the air and start off as though going on a long journey. Some will turn down a 300-acre patch of sweet clover dripping with nectar, right close to their hives, and fly three miles to get a little pollen from a seed onion! If I could have my way, things would not be thus; but if I could, what would we do for onions?

Vincennes, Ind. Jay Smith.

* * *

In Michigan.—As this is written the prospect for a large honey crop in northern Michigan was never better; however it is a matter of rain, winds and sunshine, as our early prospects are nearly always good. The season is somewhat earlier and the bloom abundant, with scale colonies showing 10 to 12 pounds per day, and good weather should give us a good white-honey crop.

The last year's crop has all been sold, and the market should be strong for the first white-comb honey, as only odds and ends of combs, principally dark, are in the stocks of the merchants. The demand for extracted honey follows the comb a few weeks later and extends through the winter.

I can see no reason why beekeepers should not get the price the last of 1921 white stock sold for. White sugar is low in price and

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glucose also very low—who wants to feed their families on these to take the place of honey? We buy an orange for the flavor, not for the little sweet it contains, and so we buy honey for its superior flavor and healthfulness. It's up to the beekeepers. Let's be wise enough to prove value in honey and ask a fair price for it.

At this time many do not super the bees sufficiently. Our honey flow lasts well into July, and the bees must have plenty of room to do their best; but, as the flow wanes, comb-honey producers should manipulate supers to get them finished.

Heavy supering at the near close of the flow will be as disastrous as insufficient supering at its height. Northern Michigan counties are quarantined against moving bees in or out of the counties—for the control and eradication of brood diseases.

Co-operation of the beekeepers will hasten results. Let's do our part or it will eventually be our funeral. A fine and quick way to clean thoroughly and disinfect a hive-body is to paint the inside and edges with a solution of half kerosene and half gasoline and quickly touch a match to it, and then apply paint to the outside.

East Jordan, Mich. Ira D. Bartlett.

* * *

In Pennsylvania.—The honey crop prospects for the state are good. Abundant rain and warm weather recently have put plant life in prime condition. White, alsike and red clovers are in bloom in most of the state at the time this article is being written (June 5). As usual, many colonies are not ready for the honey flow because of bad wintering among the farmer beekeepers especially, and swarming is in progress, which will cut down the yield. The usual amount of buckwheat will be sown. Ground is being prepared now for sowing late in June. Wild plants, like huckleberry, raspberry, blackberry and sumac, generally escaped the May frosts and are in the best of condition.

The coal strike and general depression in industry are bound to have a depressing influence on the markets unless there is a rapid recovery in late summer. Pennsylvania depends more upon industry than agriculture, and this condition at present is not good. Beekeepers should plan to obtain the best honey crop possible, and then plan as well to market every ounce of it in their home town to the best advantage that they can. To dump it on the wholesale markets this year will be worse folly than ever.

The extension work is resulting in more county associations, and here is an opportunity for beekeepers to get together on their marketing problems. Geo. H. Rea.

State College, Pa.

In New York.—The condition of the bees is exceedingly good. This section has just experienced the best honey flow from fruit blossoms and dandelions that has ever been known and early swarming has been very prevalent. Natural swarming during May probably more than made good all winter losses in this state.

Clover is beginning to yield a little, but there is very little of it in most localities in this region. We expect that the small apiaries will have the advantage over larger ones on account of the limited amount of clover.

Vetch is becoming an important honey plant in our locality, many acres being raised for cover-crops and seed. That grown for a cover-crop is generally worked under before yielding much nectar, but that grown for seed furnishes a good supply of light amber honey.

The Western New York Honey Producers' Association will hold its midsummer meeting at the apiary of J. B. Howe, Delevan, Cattaraugus County, on Tuesday, August 1. A good time is assured. H. M. Myers.

Ransomville, N. Y.

* * *

In Louisiana.—Following the fine weather of the early spring, the conditions here are not as good as were first expected. This is caused by the continued rains in some parts of our state.

During the willow bloom, the bees stored more honey this year than for the past three years. In a very strong colony here at the University the actual amount of honey stored from willow for a period of 14 days was 140 pounds, merging into the white clover flow which for seven days more continued to bring in ten pounds per day, making a total in 21 days of 210 pounds. Since this time the weather conditions have been unfavorable.

The willow is very abundant along the streams in the central-southern portion of the state, and it is a very easy matter to produce 100 pounds per colony if your bees are in reach of same. The willow blooms early; therefore to get this large amount of honey, your bees must be in the best of condition and strong in numbers.

There is not a more delicious honey than that made from the willow. The color is white with a slight greenish tinge. In fact, it looks like rain water, and the flavor is so mild that it may easily be used for sweetening tea or coffee without imparting any strong taste, as is usually the case with most honeys. For comb-honey production it makes a very beautiful section, with cappings feathery white.

The white clover is constantly at work now manufacturing the delicious nectar for the bees. This honey flow ceases about July

1 after having had a run of about 100 days.

The crop of honey produced so far is very fine and very beautiful. There are hundreds of consumers in the towns close to you, who will be willing and anxious to pay you a reasonable price for your output. But don't make the mistake of so many, that is, putting the price too high. Make it reasonable, and yet profitable to you. Put your honey up in attractive jars; avoid green jars, always select white ones, and you will find you can sell every pound your bees will make for you. Make a honey market at home first. Wait until the "little" beekeeper disposes of his honey, as he usually sells his crop for nothing almost. This merely baits the customer for more, and you come along and reap the harvest.

Baton Rouge, La. E. C. Davis.

* * *

In North Carolina.—Beekeepers in this state are most probably realizing barely a normal crop of honey in spite of the fact that early spring conditions indicated that a really "bumper" crop was in store and practically assured. This is due to continued rains the past month, that have dissipated the nectar in the flora and kept the bees from working the pasturage that gave promise of being exceptionally rich this season.

Frosts did very little damage, although some flora was killed in the Washington and Terra Ceia sections of the coastal portion of the state and in the mountains. The yield of gallberry honey was mostly cut off by the rains. However, there was probably a two weeks' good work with little interruption, particularly in the southeastern section of the state (the lower Cape Fear region). The holly, tupelo and black gums of the swamp sections of east Carolina netted a good crop, thanks to fair weather conditions that prevailed during the periods of their bloom. However, there were cold snaps and rains that set these yields back considerably.

Thanks to the abundant nectar that has been available for the bees "between showers" in this southeastern section of the state, bees generally, including those that came through the winter in poor condition this spring due to the very "lean" conditions last season, have built up wonderfully, and all will evidently be in condition to net the richest possible returns from fall flowers the prospects of which are exceptionally good.

Beekeepers are now marketing their section honey principally, doing this largely through local grocery stores. The price to grocers seems to be most generally 20 to 25 cents per section, with the retail price around 30 cents. Extracted honey has scarcely begun to move yet. In fact, the bees in practically every section of the state will have two to four weeks more of fair honey-flow possibilities, although the main flows are about over in most of the eastern section where wild flora is the main stay.

Wilmington, N. C. W. J. Martin.

* * *

In Florida.—One of the best palmetto flows that this part of Florida has ever known has just closed. The beekeepers, however, have not been able to take full advantage of it, due to the weak condition of their colonies. The earlier part of the honey flow did not fill the supers as rapidly as it should.

The cabbage palmetto is in full bloom now, and in the next ten days or two weeks it will be through. It is supplying but little nectar and no pollen, due to the myriads of thrips that are attacking the flowers. This same minute insect attacks the scrub palmetto blossoms and destroys them. When this happens the beekeepers down here call the trouble "blight,' 'and they say the cabbage palmetto is more often "blighted" than the scrub palmetto. The facts are that usually the thrips are not present in sufficient strength to destroy the scrub palmetto bloom, but they develop upon them and then migrate to the cabbage palmetto in such numbers as to destroy it completely.

The rains started about the middle of May in earnest—the first rains we have had in seven months that were sufficient to wet the ground. In the lower Keys everything was at a standstill, and many trees were delayed several weeks in blooming. There was no honey being stored, and the bees were almost down to starvation rations. Now everything is blooming heavily. The lime and other citrus trees are a mass of white, and the dogwood, mastic, black mangrove and several others, I have not yet been able to identify, are a mass of bloom. All of these except the black mangrove should have finished their period of bloom by the first of May.

I have just returned from a trip to the bees on the lower Keys, and I found on many hives a full super of foundation drawn and filled to overflowing with green nectar, not a single cell being capped. This will give some idea of how the honey is now coming in, and we hope nothing will occur to check it for the next four or five weeks.

On the upper Keys the bees have been suffering from a shortage of pollen for the past month, and it has been necessary to feed them rye flour as a substitute. The shortage of pollen is one of the most serious problems of the beekeeper in the tropics, and it is one that is seldom realized. This shortage accounts for many troubles with which the tropical beekeeper has to contend. The reason that it is so seldom

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recognized as the cause is, that there is an abundance of bloom, but it is bloom that produces so little pollen that the bees can get practically none of it. Then, again, the frequent showers wash out the pollen from many plants before the bees are able to secure it. The most abundant pollen-producers are the flowers in which the pollen is most exposed to the rains.

In a preceding article the excessive loss of queens was mentioned. One cause of this is the lack of pollen. It may not be the only cause, but it is one of the principal ones. Later, I hope to take up, in a more extensive article, the subject of pollen in relation to tropical beekeeping.

The checking of brood-rearing just when it is most desirable is another result, and sometimes right in the height of a honey flow. This is especially true during the black mangrove flow, as this tree provides no pollen available for the bees and there are seldom any other plants in bloom at the same period which do provide it. If the bees are short of pollen stores at this time brood-rearing ceases and workers begin to loaf in the hive and to die at a rate that leaves them piled on the bottom-boards. The effect is similar to a bad attack of disappearing disease or paralysis; but this will clear up in less than 48 hours, if a substitute pollen is fed them, and work immediately becomes normal again.

Brood will be found dead in all the hives short of pollen stores. It resembles very closely European foul brood, but it quickly clears very soon after pollen is available. The writer has cured in less than a week frequent cases, that in the clover region would be pronounced a bad case of European foul brood, by giving a comb well supplied with pollen. (This is not suggested as a new cure for foul brood, however.)

The beekeeper who migrates from the northern states to tropical locations should inform himself on the pollen-producing flora as well as on the nectar-producing. There are many places in the tropics where pollen-producers are too few, and everywhere there are periods when none are available. C. E. Bartholomew.

Key Biscayne, Fla.

* * *

In Ontario. At this date (June 9) our section of the country has been visited with very heavy rains and the ground is thoroughly soaked. Alsike is looking fine and is in bloom about 10 days earlier than usual. Although we have had seemingly ideal weather for nectar secretion, yet little has been gathered, and at some of our yards we have had to feed between fruit bloom and clover. But the season is young yet, and, with clover looking so well and so much moisture in the ground, I still look for a crop of clover honey even if things have been slow so far. This applies to apiaries in York, Ontario and Wentworth counties; but, for some reason or other, things are altogether different in Simcoe County, where we have two large apiaries. There the bees are very far advanced, and it is necessary to extract quite a quantity of honey from willows and dandelion to get it away from the clover that has started to yield up there already.

With so much rain here at the home section, a heavy buckwheat acreage is assured, as the ground is now in fine shape for working up into a nice seed bed for this plant.

Foul brood is bad enough in any form—no one familiar with the diseases bearing that name will dispute such a statement for a moment. But when one has the two brands to combat with all the time, as we have in our York County yards, ''bad enough'' is hardly expressive enough. European foul brood is a nuisance, while the American brand is much worse so far as a cause of actual loss of good supplies is concerned. We would have little dread of the European here any more if we had not the American in the locality as well; but the having both diseases present in a locality complicates matters very much and adds at least 50 per cent more to the general work of an apiary. This spring we have found in our eight apiaries at the home center about 25 cases of the European, most of them mild while some were bad enough. All were dequeened and left queenless for eight or ten days and then a queen given again. In two cases, after young queens had been introduced, I found a few scales of the American, showing that while these colonies had been afflicted with the European quite badly they also had a few cells of the American which had been overlooked. Indeed it is very easy to overlook a few cells of American foul brood in a colony when there are some hundreds of larvae dead from the European form. Of course all our work was for naught so far as these two colonies are concerned.

Apiarists living in localities where no brood diseases are present do not really appreciate what they have to be thankful for; and, as I think of how we had things here some 10 years ago before foul brood showed up here, I am made to think of the old saying, ''You never miss the water till the well goes dry.''

I have heard nothing concerning the proposed co-operative movement for some time, and at this late date it looks doubtful as to whether the organization can be perfected in time to function, so far as this year's crop is concerned. Secretary Millen reports a very heavy business in containers, etc., as a starter. J.L.Byer.

Markham, Ont.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Making Increase When Removing Surplus Honey. The following plan for making increase without reducing the honey crop has been tried out in Ontario and found to give good results:

During the spring, the usual precautions for swarm control and colony development are taken. After the main honey flow has been on long enough for the first super to be completed and the second one in a condition to warrant putting on a third, the beekeeper, who has either raised queens beforehand or ordered them from a breeder, sets a hive with foundation or preferably drawn comb to one side of the colony he wishes to increase. He then removes the supers of honey and takes three or four frames of brood with adhering bees from the parent colony and places them in the new hive, being careful not to get the queen on these combs. These combs of brood are replaced by foundation or drawn comb in the parent colony. A Porter bee-escape is then placed over the new hive, and the super or supers that are ready to be extracted are placed over it. The immediate result is that the bees in the brood-chamber soon find they are queenless; and, as soon as this condition is realized by the bees above the brood-chamber, they come down through the bee-escape more readily. Any field bees that leave the hive go back to the original colony to carry on without interruption the nectar-gathering. The following morning a new queen is introduced by the cage method to the queenless colony and the honey lifted off, ready for extracting.

This plan for making increase has the following advantages: The parent colony is not robbed of its field bees; the bees leave the supers over the escape board more readily; the bees in the new colony, all being young, accept a queen more readily; this honey is being taken off at a time when the bees are not cross, as the honey flow is still on; in the fall the two colonies will both be in good condition for wintering; it releases a number of supers for an increased flow of honey. H. D. Clark.

Medina, Ohio.

◆

Advantages of a Hive on Scales. That honey seasons are variable in our northern states was evident this past season; never before in our nearly 50 years' experience with bees have we had a honeyflow from flowers (not from the aphis) during September. We were busy with the honey we had harvested, crating and shipping it. We hurried to get it into market, as it was wanted, and for this reason our bees were not watched. Some colonies built comb on the outside of their hive; some under their hive or in any old place. We might have secured quite a bit of amber honey at this time, had we been on our guard. Possibly a hive on scales, if some attention had been paid to it, would have given us a pointer. I have decided that in the future this matter is to be made a feature of our beekeeping. We may never again have such a season, and we may; or some other peculiar thing may develop, and the hive on scales may put us on our guard. Let us plan for it, friends. F. Greiner.

Naples, N. Y.

◆

Five Hundred Pounds From One Colony, Spring Count. I just read the account in the Grand Forks Herald of Mr. Bennett's bees and I think I have almost as good a record for last year. I had only one colony in the spring of 1921. The first swarm came off June 12, the second June 16, and a third June 20. The third one we put back catching the queen, and then cut out the rest of the queen-cells of which there were 13, counting the ones from which the queens had emerged.

I kept the record from each hive of the honey taken off, and the second swarm produce 160 pounds of surplus honey. Altogether we took off over 500 pounds, or an average of 175 pounds to the hive, the most of this being the best grade of white clover honey.

I am going to high school and take care of the bees on Saturdays. One hive is ready to swarm now. We are trying to keep the other two from swarming by using the double-chamber method. Sidney E. Kirk.

Niagara, N. D.

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Quit Burning Your Trousers. My wife maintains with some asperity that I have scorched and burned holes in more pairs of pants, overalls and coveralls (vulgarly known as elephant breeches) than any other living beekeeper. I have a habit of holding my smoker betwixt my legs while I use my hands in working with the hive. If any of you fathers in Israel can prove an alibi in this case, speak right up in meeting. You get the "pup."

But, brother, if you must plead guilty, do it like a man and go and sin no more. Take a five-pound friction-top honey can, without the cover. With a pair of tin snips cut a strip three inches wide from top to bottom of the can. Slip the can up over your smoker and secure it above the brace which holds the fire pot to the bellows by means of a wire—and there you are. This shield will restore peace in your family, as your pants will never again have to be patched, in that quarter at least. And if you are real anxious to avoid even the

HEADS OF GRAIN FROM DIFFERENT FIELDS

suggestion of evil, why, just put a sheet of asbestos paper between the can and the smoker furnace and then you will thank me for this suggestion. W. E. Woodruff.

Clemenceau, Ariz.

* * *

Good Prospects in Iowa. White clover began to bloom on May 22. owing to an abundance of moisture in the ground. The prospects now are good for a heavy flow from white clover.

An abundance of both Hubam and biennial sweet clover is planted in this vicinity. There are fully 100 acres within two and a half miles of me, planted mostly for pasture.

I never before saw so much brood in hives in May, owing to a very heavy flow from fruit and dandelion. Returning from the hospital I found everything honey and brood bound, and am only now getting things straightened out.

Honey prices are going to be a problem the coming season, and it is not too early to begin to adjust prices. I do not believe there is any reason why honey should sell for less than 10c a pound. I am still getting 20c retail. A. F. Bonney.

Buckgrove, Iowa.

* * *

Importance of Doing the Work That Counts. It's not so much the amount of work done in the apiary but doing it intelligently and at the proper time that counts. Such things as supplying more surplus room, introducing young queens, giving the queens plenty of combs to occupy, supplying plenty of stores when needed and many more little details, done intelligently and at the right time—all these count. Young beekeepers are fast coming to the front by observing the above rules and doing things systematically.

East Avon, N. Y. A. C. Gilbert.

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A Good Hive Scraper. The best scraper I have ever tried for cleaning covers, bottoms, etc., is a common three-cornered scraping tool used by butchers in cleaning meat blocks. No two edges have the same angle with the handle, so it will push, thrust or pull and get into all corners. I. W. Cameron.

Davis, S. D.

* * *

Simplified Queen-Rearing at Close of Honey Flow. Here is an easy way to get a few good queens at the close of the honey flow: Place a frame with a half sheet of foundation in the middle of the nucleus (or colony) having your best queen, leaving it there for one week. Take out the frame, now filled with eggs and young larvae, go to a strong colony which has supers tiered up for extracting, with a queen-excluder in place. Put the frame with the eggs and young larvae in the middle of the super and place the super on the bottom-board, removing the brood-chamber (old hive) to a new location. The bees will rear some fine queen-cells which should, of course, be cut out in time to save them. Axel Holst.

St. Thomas, Virgin Islands.

* * *

Wasp Nest Taller Than a Man. This wasp skyscraper was found in the wilds of Florida. The nest is six and a half feet in height and ten and a half feet in circumference. It is made of a material closely resembling paper, which at a short distance is hard to tell from clay. It apparently housed at the start about a hundred colonies, as we killed about that many queens. R. C. Sheafer.

Sanford, Fla.

[The number of queens would not prove the number of colonies, since among the social wasps, the males and workers die in the fall and only the queens survive the winter. Accordingly in the fall there would be many queens in a colony.—Editor.]

GLEANED BY ASKING

Geo. S. Demuth

QUESTION.—If I install an electric motor having a speed of about 1700 R.P.M. to run my Buckeye extractor, is it practical to obtain the necessary seven-to-one reduction in one set of pulleys or is a countershaft necessary? H. V. Wilson.

Wisconsin.

Answer by H. H. Root.—You can accomplish this in one reduction, putting a two-inch pulley on your motor and a fourteen-inch pulley on your extractor shaft. Some do this, but it does not get the full efficiency of the motor, owing to the sharp bend of the belt around so small a pulley. You may be able to purchase a special low-speed motor for this purpose. Really the most satisfactory way is to accomplish your reduction by using a jack shaft, possibly on the ceiling. By this plan you do not have to have your belt so tight, you really get more efficiency out of your motor, and you do not have to have a large pulley on the extractor shaft, which frequently is considerably in the way.

Work of Bee Moth Larvae.

Question.—The bee moths have gotten into my bees and are killing them. What can I do to get rid of them? S. B. Hendrickson.

Ohio.

Answer.—The larvae of the wax moths do not attack strong colonies of Italian bees. They usually enter the hive after the colony has become weakened from some other cause such as queenlessness, lack of stores or one of the brood diseases. It will be well for you to examine the combs carefully to see if the colony is queenless, or to see if there is any indication of brood disease. If you find any dead or discolored larvae in the brood-combs, it will be well to cut out a piece of comb containing these dead larvae and send it for examination to Dr. E. F. Phillips, Bureau of Entomology, Washington, D. C.

Building Up Two-Frame Nuclei for Winter.

Question.—Will a two-frame nucleus made in the middle of July build up strong enough for winter without any help? Merritt Oplinger.

Indiana.

Answer.—Yes, if it has sufficient food at all times. Unless there is a fall honey flow a two-frame nucleus made after the middle of this month would have to be fed enough so that there is at all times a supply of food in the hive in order to keep up brood-rearing during late summer. If there is a fall honey flow sufficient in amount, of course feeding would not be necessary.

Different Classes of Queens.

Question.—What is the meaning of tested, untested, select tested and select untested as applied to queens? Thomas R. Peel.

Maryland.

Answer.—A tested queen is one which has been kept long enough for some of her young bees to emerge in order that the breeder, judging from her offspring, can be sure that she is purely mated. An untested queen is one that is takout of the hive and sent to a customer within less than three weeks after she began to lay, and is therefore not tested as to purity of mating. Select tested and select untested queens are simply the finest in appearance of their respective classes.

Requeening Without Dequeening.

Question.—If a queen-cell is given in a spiral-cell protector to a queenright colony, what will be the result? C. F. Strahan.

Nebraska.

Answer.—The young queen will usually be killed soon after she emerges. Occasionally the bees will accept the young queen, permitting her to supersede the old one, but this cannot be depended upon as a method of requeening.

Queen Lays Eggs on Side of Cells.

Question.—What is wrong with the queen when she lays her eggs on the side of the cell instead of on the base? Harry R. Weiss.

Ohio.

Answer.—Sometimes young queens deposit their eggs irregularly for the first few days and afterward lay normally. Queens that continue to lay their eggs on the side of the cells are imperfect in some respect and should be replaced.

When and How Often to Requeen.

Question.—When is the best time to requeen any colonies and how often should I requeen them?

North Carolina. J. L. Murray.

Answer.—In many locations, the best time to requeen is near the close of the early honey flow. If this is done before the honey flow ceases it is much easier to work with the bees than when nectar becomes scarce; and a young queen that begins to lay in July or August will lay more eggs in September than an old queen, thus making a better colony for winter on account of the abundance of young bees. In localities where the fall honey flow begins early in August, this would be a good time to requeen; but the young queen should begin to lay not less than six or eight weeks before brood-rearing ceases in the fall, for this much time is needed to furnish sufficient young bees for winter.

Sealing Honey at Close of Season.

Question.—Will the bees seal the honey that is not quite finished at the close of the honey flow? S. M. Wilkman.

Missouri.

Answer.—They will not seal all of it even if the supers are left on several weeks after the close of the honey flow. For extracted honey it does not matter if it is not all sealed, but it should be left on long enough so that it will be thoroughly ripened. For comb honey it is important to have as many sections sealed as possible. This can be accomplished by taking off the partly finished supers, sorting out the unfinished ones and putting them back to be finished. When the unfinished sections are put back, those nearest completion should be put in the middle of the super. This should be done as the honey flow is closing if possible.

Bees Build Combs on Outside of Hive.

Question.—Why did one of my colonies build comb outside the hive below the bottom last year?
Virginia. Walter Steen.

Answer.—The bees build comb on the outside of the hive because they did not have room enough inside to store all the honey they gathered. When they are compelled to build comb on the outside of the hive in this way, they store much less than if more supers had been given, for such crowding causes a stagnation of work. For this reason it is extremely important during the honey flow to see that every colony has at all times either some empty combs or some foundation to work on in the supers.

Bees Fail to Store Surplus.

Question.—Why did my bees fail to store surplus honey last season when there are no other bees around and we have flowers for them to work on? Mrs. Oline P. Root.
Ohio.

Answer.—There are so many possible reasons for the bees failing to store surplus honey that without having seen the colony one can only guess at the trouble. Generally speaking, there are two reasons for failure to store surplus honey: first, a failure of the season because of a lack of nectar-bearing flowers or because of unfavorable weather conditions during their period of bloom; and, second, a failure in the management, so that the colonies are either not strong enough at the time of the honey flow or some condition in the management has been unfavorable, such as not giving the supers early enough or providing for the comfort of the bees.

Not all flowers are nectar-bearing, and only a comparatively few species can be depended upon to furnish enough nectar for surplus honey.

Cleaning Extractor after Extracting from Diseased Colonies.

Question.—To render it safe for use, how can I clean an extractor that has been used in extracting combs of honey from colonies having American foul brood? John Knapp.
Michigan.

Answer.—The important thing to do is to wash the extractor thoroughly so there is not a particle of honey left on it anywhere. When this is done it should be safe to use in extracting honey from healthy colonies.

Bees Suddenly Become Cross.

Question.—Can you explain why bees become so viciously cross all of a sudden when at other times they are gentle? D. B. Clapp.
North Carolina.

Answer.—The temper of the bees depends largely upon the character of the honey flow. Where there is an abundance of nectar available during most of the day the bees are usually good-natured, but if nectar is available only a part of each day the bees are liable to become cross when the flowers quit yielding. When the honey flow closes suddenly the bees are usually cross. As the season advances the bees are apparently more inclined to sting than early in the season. Beginners especially should bear these things in mind and use more precautions against stinging when the flowers are not yielding and as the season advances.

Bees Quit Working in Supers.

Question.—Last season when the bees had their sections almost ready to cap they suddenly began to hang out as though they were going to swarm, but they did not swarm, neither did they finish the sections. What was the trouble?
Indiana. Pearl Hendrickson.

Answer.—When the sections are full the bees must then wait until the honey is ripened before sealing it. If you did not give them more super room this would explain why the bees quit work and began to cluster on the outside of the hive. To wait for the bees to seal the honey before giving another super would sometimes result in the loss of several supers of honey that might have been secured if more supers had been given at the proper time. Of course, it may be that the honey flow ceased at the time you noticed that the bees quit work, which would cause them to cluster on the outside of the hive. After the honey flow it is perfectly normal for the bees to cluster out in this manner.

Cause of Honey Souring.

Question.—What causes extracted honey to sour and how can it be sweetened again?
Illinois. B. W. Green.

Answer.—Honey that is not well ripened before it is extracted is liable to ferment. Honey should be left on the hives until the combs are two-thirds or more sealed or longer in order that it may become well ripened before extracting. Honey that is slightly fermented can be improved by heating it to about 160 degrees.

Two or More Queens in One Hive.

Question.—Can I keep two or more queens in the same hive by separating them with perforated zinc? John Sweep.
Maryland.

Answer.—You can keep more than one queen in a hive in this way during the honey flow and sometimes longer, but usually all but one of them will disappear after the honey flow.

Effect of Queen-excluder on Super Work.

Question.—Will the bees work better in extracting supers when no queen-excluder is used between the brood-chamber and the supers?
West Virginia. D. M. Clingman.

Answer.—It is doubtful if you will be able to detect any difference in the amount of honey stored when queen-excluders are used between the brood-chamber and the supers, especially when the new 7-wire excluder is used.

TALKS TO BEGINNERS

Geo. S. Demuth

JULY brings to the beginner several new problems in the management of his colonies, since in a large part of the country the main honey flow ceases some time this month, thus bringing enforced idleness to the thousands of workers of the hive.

Some seasons, the honey flow closes abruptly, with but little if any warning, especially if the weather becomes hot and dry; while other seasons it tapers off gradually toward the close, giving the beekeeper an opportunity to adjust affairs to the changed conditions.

In some localities, especially in the far north, the fall honey flow begins at about the time the early honey flow closes, thus giving a continuous honey flow through the summer; but, in most localities having a fall honey flow, there is an interval of several weeks between. In the greater part of the United States there is no dependable fall honey flow, the close of the early honey flow marking the end of the season so far as surplus honey is concerned. In a few localities such as the buckwheat region of New York and Pennsylvania, the main honey harvest does not begin until in August and September.

Wherever the honey flow may be expected to close this month, the beekeeper should keep close watch for indications of the close of the season in order to have the work in the supers finished to the best advantage.

How to Tell When Honey Flow is Closing.

One can tell something about the probable duration of the honey flow by noting the progress of the flowers that are furnishing the nectar. For example, in the clover region where most of the surplus honey is gathered from white clover and alsike clover, the honey flow may be expected to cease when most of the clover blossoms have matured. Sometimes, however, timely rains revive the white clover just as the season appears to be closing, thus prolonging the honey flow a week or two; but, if the weather is hot and dry the honey flow usually closes distressingly early, for then the blossoms mature quickly. Where sweet clover grows extensively, the honey flow is usually prolonged through July, but it tapers off toward the end of the month.

In the hive, one of the first indications of the closing of the season is the tendency of the bees to begin crowding more honey into the brood-chamber and putting less into the supers. The honey is crowded in at the upper portion of the brood area as the young bees emerge, thus limiting the queen to less space. The bees also build comb less lavishly toward the close of the season and they are inclined to discolor the newly built combs with propolis, giving them a yellow appearance. Another indication of the closing of the season is the way the workers treat the drones. As the close of the honey flow approaches, the drone are often crowded down on the floor of the hive or out at the entrance, and occasionally a worker can be seen struggling with a drone some time before the general slaughter of the drones, which usually occurs after the honey flow has ceased. A very distressing indication that the season is closing is the tendency to rob and an increasing tendency to sting. If the bees have been working so well that they paid no attention to honey exposed when opening the hives, but now suddenly begin to pounce upon exposed honey to carry it away, the honey flow is no doubt closing. As soon as the first indications of robbing are seen great caution is necessary in handling the bees. In fact, they should not be handled more than is absolutely necessary when they are cross or inclined to rob.

Beginners should be careful as the season advances, for, even before the close of the honey flow, the bees often become cross and ugly to handle. Some take great pride in handling bees without a veil and sometimes even without a smoker; but, while this can be done earlier in the season with reasonable safety with gentle bees, it would be folly for anyone but an expert to try it when the honey flow is closing. Bees that were gentle during the earlier part of the honey flow can not be depended upon to continue to be gentle this month. It is not a disgrace for a beekeeper to put on a good veil and be sure his smoker is going well before attempting any work with the bees.

Management of Supers as Close of Season Approaches.

During the latter part of the honey flow, additional supers should not be added so freely as earlier. It is better now to crowd the bees a little for super room than to give too much, but there should always be some room in the supers for new work until the honey flow has entirely ceased.

When producing extracted honey, the bees should have in the super at the close of the season at least two or three empty combs that were not needed, in order to be sure that they have had enough at all times. For comb honey, either in sections or in shallow extracting-frames (bulk comb honey), there should be some foundation for the bees to work on as long as they are willing to build comb.

For either extracted honey or comb honey the super work should be concentrated as much as possible toward the close of the season to prevent too much unfinished work, but this is especially true for comb honey. The first step in concentrating the super work is to put the new super on top of the partly filled ones, when giving additional room. When this is done if more room is needed, the bees will use it; but, if not needed, they will neglect it, and the work in the other supers will not be retarded as would be the case if the empty super is placed below.

If extracted honey is being produced, a few combs of sealed honey from the middle of the super can be taken out and extracted, then put back to be refilled by the bees, instead of giving a whole super of empty combs or frames of foundation. This can also be done if there are no more supers at hand.

Comb-honey supers should be taken off promptly as soon as most of the sections are finished. It is not often advisable to leave a comb-honey super on the hive until every section has been sealed; for, before those in the corners are completed, those in the middle of the super may have their dainty white cappings discolored. It would be better, so far as the appearance of comb honey is concerned, if each section could be taken off the hive the day it is finished, but this is not practicable. There is usually not much trouble from discolored cappings during the midst of a rapid honey flow; but, toward its close or during a slow honey flow, the bees are inclined to varnish the cappings with propolis, thus spoiling their appearance.

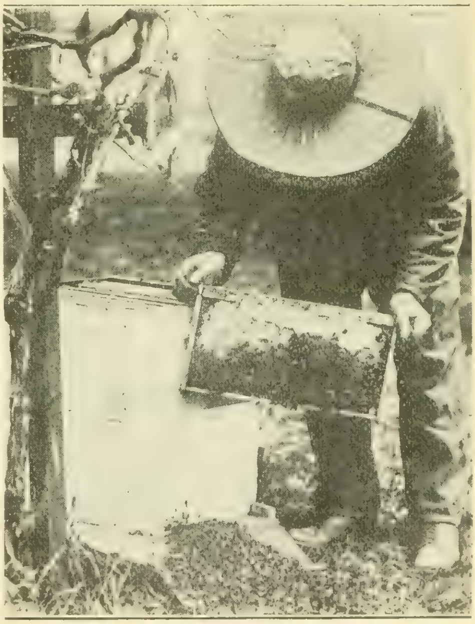
Unfinished Sections Given Back to the Bees.

When the nearly finished supers of comb honey are taken off, the unfinished sections should be sorted out to give back to the bees to be finished. For instance, a colony may have three or four comb-honey supers well advanced and one in which work has been recently begun. There may be enough unfinished sections in the three or four advanced supers to fill one super, the rest of the honey being finished. In such cases the advanced supers should all be taken off, the honey sorted and the unfinished sections all assembled in one super. If the honey flow is now actually near its close, this super of nearly finished sections should be put back directly on top of the brood-chamber, and the other super in which work is just well started should be placed on top. This arrangement will cause the bees to finish the honey promptly. They may even remove some of the unsealed honey from the upper super and carry it down into the lower one. In this case it is not expected that the upper one will be finished. It is to be taken off and saved for next year.

Usually there will not be enough nearly finished sections on each hive to fill one super; but, if there are several colonies, the unfinished sections from all of them can be assembled and given back to the colony or colonies doing the best work at finishing the honey. Those who have but one colony can assemble the sections which are nearest complete in the middle of a super, placing those in which less work has been done on the outside. In this case it is not necessary to have a second super on top, since there is room for the bees to carry on comb-building in these sections at the sides of the super.

It is not possible to secure the completion of all the sections on which work has been started; but, by concentrating the unfinished work in this manner, all those nearest complete can usually be completed.

As soon as the bees quit finishing the honey and if possible before they begin to discolor the cappings and the wood of the sections with propolis, all of the comb-honey supers should be taken off whether finished or not. Those sections that are still unfinished can be put away to feed the bees later, or some of them can be used at home. In the local market some of the heaviest of the unfinished sections can be sold as culls.



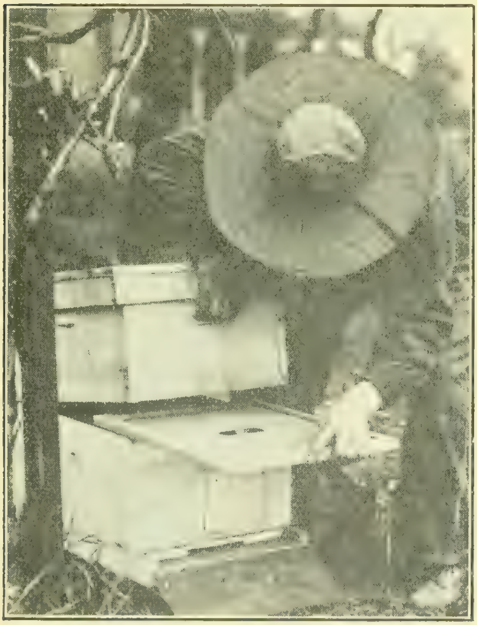
Shaking bees from a comb.

Comb-honey supers in which but little work has been done, if taken off promptly before the bees begin to gnaw down the foundation or stain the wood of the sections, will be of great value in starting work in the supers next year; but, if they are left on the hives a few days too long, they may be practically ruined so far as producing fancy honey in them later is concerned. It is better, therefore, to take off all comb-honey supers a little before the honey flow actually ceases than to leave them on too long.

How to Take Off the Honey.

While supers of honey can be removed from the hive without a bee-escape without much trouble during the honey flow, at the close of the honey flow the bee-escape is almost a necessity.

If the bee-escape is not used, the combs must be taken out of the extracting-supers one at a time and the bees brushed and shaken off. To do this, an empty super should be at hand in which to put the combs as they are taken from the bees. When the hive is first opened the bees should be started down out of the super with smoke and should not be permitted to return. As each comb is taken out it should be given a quick jerk to shake off most of the bees, then those remaining should be brushed off with a bee-brush or a large turkey-wing feather. The first two or three combs can be shaken in front of the entrance, but the remainder can be shaken back into the now vacant portion of the super on the hive. If robbers are troublesome, the honey should be kept well covered with a piece of canvas. In doing this kind of work, two can operate to better advantage than one.



Putting in the bee-escape board.

In taking off comb-honey supers without a bee-escape, most of the bees should be smoked out of the super. As the cover is lifted, the bees should be started down at once with smoke and kept on the go until they are out of the super. If they are permitted to stop on the way they will fill themselves with honey, and, after they once get their heads into a cell, they pay but little attention to smoke. When the cover is first lifted, the bees on top of the sections can be brushed off over the edge of the super, the operator brushing and smoking at the same time. While the bees are being driven down, the super should be pried loose but not lifted until most of the bees have gone below. Then one end of the super should be lifted and at the same time pulled slightly backward so one end will rest on the brood-chamber or the super below, while the super being removed is brought almost to a vertical position. This should be done so quickly that the bees on the bottom of the super do not have time to go back into the super before they can be brushed off. When this operation is complete most of the bees should be out of the super, and it is ready to be carried into the shop where the rest of the bees will soon leave it and fly to the windows when they can be permitted to escape by opening the window for a few seconds. Great care should be taken to keep the honey where the bees can not get at it; for, if they should be able to do so, they would rob it out and carry it back to the hives.

When the bee-escape is used in removing the honey, simply lift the super and insert the bee-escape board with the bee-escape in place below it, being sure that the flat side of the escape-board is down, and that the bee-escape is in position so that the bees can pass down through it. See that there are no cracks through which bees might gain access to this super, for when the bees desert it robbers would get in if they could find an opening anywhere large enough to squeeze through. Within 12 to 24 hours the bees should all, or nearly all, be out of the super when it can be taken away without disturbing the bees. This is by far the best way to take off honey, especially at the close of the season.

When taking away the honey, the beekeeper must not forget that the bees must have enough honey left for their own use during the fall, winter and spring. Thousands and thousands of colonies are lost or rendered practically useless every year, because their owners fail to leave them enough to live on during the time but little or no nectar is to be had from the flowers. One of the best ways to provide for the bees is to have a second story for each hive. At the close of the honey flow this second story should be nearly two-thirds full of honey. This can easily be arranged when producing extracted honey; but, when comb honey is being produced, it is necessary to plan ahead to have this honey stored in the combs. It is a good plan to take off comb-honey supers a little before the honey flow closes, and give a second story so the bees will store some honey in it. After the two-story equipment is once supplied, this second story can usually be filled with honey during the early part of the honey flow to make sure that it will be on hand when needed.

BEES, MEN AND THINGS

(You may find it here)

TO help prevent swarming, keep open brood outside and hatching in center of brood-nest. Arrange the brood thus before putting on supers.''—A. C. Gilbert, Livingston County, N. Y.

''The part of Queensland I am in is not a good part for bees as it is too dry and the rainfall very erratic. It is very dry here at the present time (May 8). It was only a few years ago that the first English (black) or Italian bees made their first appearance out this far. There are a good many of the small native bees; but these cannot be domesticated as they will not build their combs on frames the same as the other bees do, and a good nest out of a tree will have only about a quart in it and the bees have no stings.''—F. L. Treweeke, Noondoo Siding, Queensland.

''Our state specialist in beekeeping, R. B. Wilson, has accepted a position in his home state, New York, and our director of extension says he is going to leave the Mississippi place vacant until he can get a real good man to fill it.''—D. D. Stover, Lowndes County, Miss.

''Work in apiculture at Vocational School No. 1, U. S. Veterans' Bureau, Chillicothe, Ohio, is progressing rapidly. I have to date enrolled in this course 24 students, and each and every one of them is very much interested in the work.''—H. L. Cress, Jr., Instructor in Apiculture, Chillicothe, Ohio.

''I suppose you know and practice this kink for the easy finding of queens without moving any frames. Uncover a strip across the frames on top of the hive, then send ten or twelve puffs of dense smoke under the frames. The bees will soon come boiling on top of the frames when it is an easy thing to catch the queen among them.''—H. Dupret, Montreal, Canada.

''There has never been a season so favorable at this time of year as now for a bumper crop of honey. Bees wintered well and the spring has been unusually fine for brood-rearing, and the hives are running over with bees. Both white and sweet clover are about ten days or two weeks ahead of usual time.''—W. H. Williams, Tazewell County, Ill., May 24.

''Bees ought to wear tags such as are affixed to dogs for the purpose of identification. This was well established yesterday by Attorney Atchison, attorney for W. W. Culver & Son, defendant in a damage suit brought by Hill Brothers, who alleged that Culver's bees attacked the horses when they attempted to plow their land in the Paulin addition to the city. It was rumored that Attorney Atchison would demand identification of the bees that attacked the horses and he did. On cross-examination he had witnesses describe the bees as small black ones, and then a number of other witnesses established that the Culver bees were large yellow ones. The Culver apiary is on the tract of land in question, and the Hill Brothers had 20 acres there which they claimed in their complaint they could not cultivate because of the Culver bees. Judge Markey decided in favor of the defendant on the grounds that the ownership and identity of the bees had not been established. The case was watched with great interest, and beemen from all over the valley were present to hear the evidence and note the outcome of the suit as it has bearing on their future activities in honey production.''—Calexico (Calif.) Chronicle, Feb. 8.

''We have a very peculiar season just now as it is raining all the time and in the Red River Valley the bees are gathering a heavy surplus of good quality from honey locust, prickly ash and huckleberry. I have an apiary at Arthur City on the bank of the river that has a surplus of 50 pounds of good quality, and needing more room; but it is raining today and there are 12 miles of dirt road to travel over to get there, so you see the beekeeper has trouble too. We have had four weeks of continuous rain. The farmers have been unable to do any work, although the rains are moderate, but keeping the ground wet so nothing could be done on the farm. In many places there have been floods and storms. The bees in the black land are better than usual at this time of the season.''—E. W. Cothran, Lamar County, Texas, May 15.

''On May 24 there was held at the Pettit Apiaries, Georgetown, Ontario, a field day of the Toronto Beekeepers' Association jointly with the Halton, Peel and Waterloo beekeepers' associations. There was an attendance of something like 200 beekeepers, some of them being among the largest producers in Ontario and in fact of the whole continent. Like most other field days in Ontario there was a large and enthusiastic gathering, especially at the picnic lunch. A great deal of credit is due to the secretary, Peter Temple, for the success of this meet. The speakers were Morley Pettit, Prof. F. Eric Millen, Prof. C. B. Gooderham, H. G. Sibbald and E. R. Root. A strong feeling of optimism prevailed among the members present, the honey crop of last season having all been sold and the prospects for the coming season exceedingly bright.''—E. R. Root, Medina, Ohio.

OUR HOMES

A. I. ROOT

Lord, to whom shall we go? thou hast the words of eternal life.—John 6:68.

And God said, Let us make man in our image, after our likeness; and let him have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth.—Gen. 1:26.

God, be merciful to me a sinner.—Luke 18:13.

YOU will notice—at least I hope you will—an advertisement in this issue headed, "Evolution at the Bar." When Darwin's work was first mentioned in print, I made haste to get it. I studied all of his works pretty thoroughly. At that time, something over fifty years ago, I was more in touch with the crowd of unbelievers than with Christian people, I am sorry to say. My attitude of mind, or perhaps I should say of heart, is explained in a little passage I quote from the book mentioned:

> The warfare of philosophy against Christian faith is readily explained. Man is corrupt. He loves sin. He is conscious of his guilt and fears the penalty. Hence every avenue of escape is welcome if only he can persuade himself that there is no God. no judgment.

Now, please do not understand by this that I was transgressing the laws of our land. I had committed no crime; but I was well aware that I was trampling under foot at least one or more of God's holy laws, and that was why I grasped so eagerly everything that Darwin, Huxley, Spencer, Tyndall, and I do not know but I could include Louis Agassiz also. When I found later, however, that Agassiz had exposed his ignorance by undertaking to teach us about the honeybee, I began to lose faith in some of the vaunted scientists of that time. Well, when the dear Lord lifted me from the "sinking sands" of unbelief a little later, I lost track to some extent of Darwin and evolution; but I managed to keep tab, at least fairly well, on the *results* of the teachings of evolution. "By their fruits ye shall know them." At about the same time, and perhaps for the same reason, I made a pretty thorough investigation of spirit rappings and spiritualism, but soon decided that the exponents of neither one bore "good fruits."

Now, there is one kind of evolution that is all right, and may God be praised for it. This book I have mentioned makes it very plain as to what is genuine evolution and what is false. Let me quote from page 73:

> Evolution is the method of working which prevails everywhere, and always has, *in human affairs;* whereas outside of human affairs there is *not a trace of it* to be found in all the universe.

Under the manipulation and management of mankind or humanity, created in God's own image, evolution is a blessing to the world. The author of this book sums it up as follows:

> A few centuries ago the crudest implements served the farmer for preparing the soil and gathering his crops. From those simple beginnings have evolved the tractors, harvesters and other modern wonders of farm equipment; and the advance has been by slight, progessive changes. Here is evolution sure enough, and precisely as described by Spencer and other materialists. So likewise in the department of locomotion and transportation, it is easy to trace, between the wheelbarrow and oxcart of by-gone days, and the auto-car and flying-machine of the twentieth century, a connected line of evolutionary progress. And a similar line may be traced from the birch-bark canoe to the transoceanic liner and the submarine.

And now read another quotation, from page 75:

> Wherever we look within the realm of human affairs the evidences of evolution stare us in the face; but in striking and significant contrast with this is the fact that, the moment we pass the boundaries of that realm, we strain our eyes in vain for a scrap of evidence to indicate that the process of evolution ever had a foothold. The birds construct their nests, the beavers their dams, the beehives and ant colonies carry on their complex operations precisely as they always have done. Moreover, each of those creatures does its work perfectly at the very first attempt, whereas man makes innumerable failures before he can do anything even passably well.

Please notice that last sentence, and then consider bees and bee culture, with which our readers are doubtless more or less familiar. Did the bee acquire its wonderful ability by slow degrees, or did it probably, like other insects, come into the world, even away back in the days of Adam, a skilled mechanic at the outset?

This book has only 80 pages. It will not take one long to read it. Some might consider it a rather high price for so small a volume; but when you consider the pains the author has taken to quote voluminously our best authorities of the present day, you will realize what an amount of labor he has bestowed to make this book clear up to the present time. In fact, I think it was first put out as late as April, 1922. As an illustration of the importance of such a work at the present time, and also as a reason why it should be read and considered by every parent and every teacher, I quote from page 71 as follows:

> A parent, writing to a religious periodical, tells of a text-book brought home by his seven-year-old boy, the title of which was "*Home Geography for Primary Grades.*" The following quotation will serve to show what is now being taught to children of the most tender years. Discussing the subject of birds, this text-book for primary grades says: "Ever so long ago their grandfathers were not birds at all. Then they could not fly, for they had neither wings nor feathers. These grand-

> fathers of our birds had four legs, a long tail, and jaws with teeth. After a time feathers grew on their bodies, and their front legs became changed for flying. These were strange-looking creatures. There are none of them living like them now.'' Such are the monstrous fictions now taught to little children as scientific truth.

While I was aware that we have teachers, and I am afraid *preachers*, who are giving such talk as the above, I confess that I was not aware that any such thing had gotten into the text-books of our schools—especially schools for the little ones. May God forbid; and I hope that this book, by calling attention to the matter, may be the means of having that ''Home Geography'' banished at once from the schools of our land. In his mention of the different books that have been written during the last fifty years in regard to evolution, I had to smile when I read the title of one of the books referred to in the following quotation:

> Dr. E. Dennert's book, ''*At the Death-bed of Darwinism*,'' gives the testimonies of leading scientists, showing that the title given to his book is fully justified.

I am well aware that Christian people are taking sides now on this matter of evolution as they have never done before; and I am afraid that there are quite a number of professing Christians, and perhaps some ministers of the gospel, who have gotten it into their heads that evolution conflicts with the Bible; but I think our ablest and most devoted followers of the Lord Jesus Christ decide there is no conflict worth wasting time on. Let us hold fast to the thought made so plain in the book, that evolution under the direction and management of humanity (the humanity *created in God's own image*) is a wonderful success, but that without this same God-given, human hand to direct, there is no progress nor advancement of any kind, out of the darkness of savagery and cannibalism into the glorious light of the present age, and especially of the glimpse that those who are living near to God and under the direction of his only Son, the Lord Jesus Christ, may have of what is coming in the future, and perhaps the very near future. While discussing this matter I remember a fragment of one of Watts' hymns:

Is this vile world a friend to grace
To lead me on to God?

Now permit me to paraphrase it just a little:

Is Darwin's Evolution a friend to grace
To lead me on to God?

A Professor in Overalls.

I have several times mentioned the fact that I feel greatly indebted to the many kind friends so ready and willing to lend a helping hand during this busy life of mine; and perhaps I had better mention again that, in order to have my undertakings come out successfully, I have found it absolutely necessary to be on hand to keep watch, and sometimes turn in and help these mechanics or men of science who are trying to work out my ideas. I have already mentioned at different times during the past three or four years my good friend, L. C. Kaiser, who has charge of the Bradentown electric lighting plant. Well, after our windmills were installed I discovered that my electric radiator gave out very much more heat in the garage near the windmill than it would in the house, say 150 feet away. When I appealed to friend Kaiser he explained that the copper wire from the windmill to the house was too small for a 32-volt current—that a heavier wire would have to be put in; and he volunteered to put in a heavier wire for me. Now, I had already been told that the insurance companies insist on professional wiring before they will insure property; and as I followed friend Kaiser in his work I said to him something as follows:

''My good friend, are you sure the way you are doing this is in accordance with the inspector's rules?''

''No, I am not quite sure, but I think it will answer.''

''By the way, did *you* ever wire up a house before''?

''No, I never did; but I guess this will pass muster.''

My long-time friend and expert helper, especially in electricity, Mr. L. C. Kaiser.

I dropped the subject, but still felt a little uneasy about it as I followed along with him. After a little spell he said, with one of his comic smiles:

''Why, Mr. Root, maybe you will feel a little easier if I explain to you that *I* happen to be the electric inspector for Manatee County.''

A College Professor in Overalls.

When I found out that I needed another windmill to run my automobile, light the house, heat the radiator, etc., the question was, ''Who will put up the tower and install the machinery?'' To my great surprise, Prof. C. D. Clipfell of Wyndmere, N. D., superintendent of the Wyndmere Electric Windmill Co., said he would come down and put up my tower and install the machinery free of charge if I would pay his traveling expenses to Bradentown. As he and his wife were intending to spend their winter in Florida they would pay their own expenses back home, of course. When the professor arrived I had the timber for the tower all on the ground—8 pieces 6 inches square and 24 feet long, in order to put up a 48-foot tower. Our first tower was put together while it was lying on the ground, and pulled up by a lot of men and a capstan. My good friend Clipfell had never put up a tower with sticks that long. The blue-print called for 12 pieces 16 feet long instead of 8 (as I had it), 24 feet long. But he said he thought he could do it all right. I had the anchor irons all ready, set in cement sometime before, which was now hard enough to stand the strain.

Perhaps I might explain right here that I made a short cut for these corner supports. I procured four good-sized barrels, took out the heads, and then removed the hoops from each barrel half way up, leaving the staves on the lower half so they could be wedged or spread out tunnel-shaped at the bottom. I wedged in cross-pieces so as to hold the staves spread out. Then I dug a hole where each corner was to be, large enough to let the barrel in, with the top, where the hoops remained, 6 or 8 inches above the level of the ground. The anchor irons were then cemented in the center of each of these barrels. They were simply pieces of old iron, say 1 by 3 inches, with a one-inch hole near the upper end. These irons were set in the barrel just where the corner posts were to be located. In the hole in the top was put a one-inch bolt long enough to go thru the bottom of each 6-inch timber. It was not a very difficult matter to set up the four lower timbers and nail on the proper braces to make the bottom half of the tower. Now when you come to think of setting four more 6-inch timbers 24 feet long on top of the first four it looked to me almost like an impossibility. I asked the professor if he did not want one or more expert carpenters. He said he did not want any carpenters at all, but a good stout colored boy to do as he told him, and one who was not afraid to climb would be all right. Our neighbor Rood let us have such a boy who had some knowledge of carpenter work, and with his help we thought we could do the work all right; but the boy got it into his head that he was not getting pay enough for *such* an undertaking, and so we let him go. Friend Kaiser got a short leave of absence to turn in and help. Maybe you would like to know just how these two men set four sticks of timber, each 24 feet long, on top of four similar timbers already up. They did it this way:

A college professor, and at the same time an expert mechanic in his working rig, Prof. C. D. Clipfell.

A stout rope was attached to the middle of one of the 24-foot pieces. Then with rope and tackle they hauled it up to the top of the first four. When swung around vertically it reached 12 feet above the first four. I think they managed to haul it up a little more than 12 feet, and then braced and chained it securely in place. With the aid of this first one they pulled up a second one and got it in place and bolted it to the splice already made in the two sticks so it could be straightened up and stayed 48 feet high. With this one in place, of course it was an easy matter to set the other three. Then Mr. Clipfell finished the tower with the help of Wesley, who stood on the ground and pulled a rope to lift up the stuff. Wesley was a little afraid to climb so high up in the air.

Before I go any further let me explain that, during all my life, I have regarded a college professor as all right before his class of pupils; but with a hoe or a set of carpenter tools I did not suppose that, as a rule, he would be "anywhere." I found Mr. Clipfell was an expert carpenter, and could do almost anything in the way of woodwork or ironwork if he had the proper tools. Of course we had blueprints of the whole edifice, and several times I began to worry because the professor did not pay much attention to the blueprints. Finally one day when I was feeling troubled about some of the short cuts, he gave me one of my happy surprises, by saying:

"Why, Mr. Root, if it will make you feel any better about it I might mention that I made all the blueprints that you have myself."

"*You* made them?" said I.

"Certainly. I made all the blueprints that were ever sent out by the Wyndmere Electric Windmill Co."

And then I had my second vision of a professor in overalls—you might at this time say a *college* professor in overalls. I might add that my good friend, after he had finished the tower and set up the windmill, did a lot of things for me for about half the regular wages, or for nothing at all. So far as I can learn he has now left college work and mechanical work, and is growing great big red apples away up in Minnesota.

After submitting the above to my friend Clipfell, he adds to it as below;

BUILDING A WINDMILL TOWER, RATHER THAN RAISING IT.

In this description of the above operation I wish to make it plain that this tower was built in place, rather than put together lying on the ground and raised into place, as is usually done.

In the first place, the entire tower was cut or sawed out, according to plan as shown by the blueprint. Each piece, or rather group of pieces, such as the cross and girder braces, were carefully laid in separate piles so that they could be easily found when the actual building of the tower was begun. The four corner posts, made up of two 6 x 6 x 24-foot timbers each, were cut to length and the splice at the center carefully fitted and bolted together. These were then unbolted and taken apart and marked in such way that no difficulty would be experienced in getting them together again as they originally were when erecting them.

The process of erection was then undertaken as follows:

Two of the lower halves of corner posts were bolted to two of the anchor irons, the posts lying on the ground in such a manner that the cross and girder braces for one side of the tower could be nailed to them. Only one bolt was used in each post so that, after the braces had been nailed on, these two posts could be raised into their approximate position, using the bolts thru the anchor irons as hinges upon which to swing them. Having raised these two posts into position, the other two bolts thru the anchor irons were put in, and the frame thus formed was securely braced in position as a matter of safety.

In a similar manner, the other two lower halves of the corner posts were bolted to their anchors, their braces nailed on and the whole swung up into position and temporarily braced. It required the help of four or five extra men, recruited for the purpose for the few minutes that it took to raise these two frames, and this was really the only part of the whole job that required anything more than two men. It was a simple matter to nail on the remaining braces on the other two sides of these two frames and thus complete the entire lower half of the tower.

The raising of the upper half was accomplished with the aid of a good block and tackle as follows:

One of the upper half corner posts was passed up thru the center of the tower and made fast in its position by using the longer of the cross braces not yet put on as cross-pieces to reach across the center of the tower, thus forming a support for the bottom of this center post and also a secure fastening further up to hold it in its vertical position. This central post was placed so that it extended about 15 feet above the top of the lower half of the tower and was used as a jim-pole with which to raise the other three top corner posts. By means of the block and tackle fastened to the top of this jim-pole, the other three top halves of the corner posts were swung into place and securely bolted at the splices. The side braces for two sides of the tower could then be nailed in place on the upper half. With these braces in place the upper half of the tower became reasonably rigid, and it was then possible to take down the post in the center and, with the block and tackle fastened at the top of one of the three posts already in place, swing it up into its position. This last post was then bolted at the splice and the remaining side braces nailed on.

It remained then only to make the ladder, nail it in place, and, using it to ascend and descend the tower, complete the entire structure with the aid of a hand line and Wesley at the lower end of it.

It should be evident that, with this method of erection, there is no need for any scaffolding or extra bracing material whatever. The unused cross-braces furnish all that is needed of this material and may be used for what little of such braces as are needed. It will be found that, as the work progresses, such as may have been used of these braces for such purposes will be released in plenty of time so that they can be put in their permanent places as needed.

Mr. Rood's colored boy remained with me until the tower was entirely completed. It was when we wanted him to help put the windmill itself in place that he "resigned." Then Mr. Kaiser helped us out by coming out a few mornings when he was off duty, until we had the wheel in place.

I might add that I am not raising apples here in Minnesota as you seem to think. The only red things we raise are Rhode Island Red chickens and Red Jersey Duroc hogs. In other words, we are doing a general farming business in hogs, cattle, and sheep, and the full line of diversified crops. The apples you have in mind are raised on my brother-in-law's ranch at Hood River, Oregon.

Late.—I have just now by accident learned that my expert friend Clipfell was for ten years instructor in the State School of Science of North Dakota, and also a graduate engineer from the University of Minnesota.

Blueberries in New Jersey and Blueberries in Florida.

Last August I wrote up my visit to Jersey to see the improved blueberries, or "huckleberries," as they are often called; and I told you I received two plants that cost me $5.00 each, as the result of many years' selection and cross-fertilization. Well, today, June 12, each plant has many clusters of great beautiful berries; but, of course, they are not yet ripe. But they bid fair to be fully equal to the large beautiful delicious berries I found at Whitesboro, N. J. Now for the Florida blueberries:

Two different concerns at Tampa, Fla., or near there, are sending out catalogs describing half a dozen or more blueberries; but they want a dollar or more each for their plants; and I took it from their advertisement that these were nursery-grown plants. Sometime in March I saw the following advertisement:

> BLUEBERRY TREES prepaid 30 cts. each in small lots. 100 $15 f. o. b. W. C. Carver, Route 1, Crestview, Fla.

I at once inclosed a dollor for a sample, stipulating that I wanted transplanted nursery plants, and that if they were just plants taken from the forest they were to return the money. Imagine my surprise at receiving the following:

> Your order received. I am very sorry to say my trees are all forest-grown, but they are the same kind as those that are being cultivated in the South. There is no "improved kind" in the South. The cultivation makes the berries larger and some advertisers misrepresent these bushes or trees. Every tree that is sold in south Florida comes from here, and 95 per cent are forest-grown stuff. There are over 200 acres in berry trees in this county, and all come from the forest. There are trees here that bear as high as 40 quarts of berries in one season. We call these berries the "Rabbitseye." They are about the size of a rabbit's eye, so you can judge for yourself about whether they are like your kind or not. I want to be honest about this. Enclosed you will find your money. I am sending a sample of trees by parcel post.
>
> Yours truly,
> W. C. Carver.
>
> Rt. 1, Crestview, Fla., Mar. 2, 1922.

Now, I was considerably surprised to have Mr. Carver tell me that Mr. Sapp has found by years of experiment that plants or trees taken directly from the forest give even *better* results than transplanted nursery plants. See August Gleanings for a continuation of this matter.

Classified Advertisements

Notices will be inserted in these classified columns for 50c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column, or we will not be responsible for errors. For special conditions on bee and queen advertising, please write us. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

M. C. Berry, E. S. Robinson, Sioux Honey Association, Brookside Apiaries, Sarasota Bee Co., Wells D. Rose, M. F. Perry, B. F. Averill, Rosedale Apiaries, H. S. Ostrander, H. E. Graham, C. A. Mayeux, Oscar Mayeux, Spahn Bros., Western Bee Farms Corps., Michigan Honey Producers' Exchange, The Orange Apiaries, Mead Cycle Co., Boyd Import & Mfg. Co., Hardin S. Foster, King's Apiaries, A. J. Lemoine, Tropical Apiaries, Henry Field Seed Co., Kitselman Bros., Hayneville Apiary Co.

HONEY AND WAX FOR SALE.

FOR SALE—Clover, amber and buckwheat honey. 60-lb. cans and 5 and 10 lb. pails. C. J. Baldridge, Kendaia, N. Y.

FOR SALE—Choice saw palmetto honey, 390-lb. barrels, $35.00; 10-lb. cans, $1.25 f. o. b. Ward Lamkin, Arcadia, Fla.

FOR SALE—25 tons fine extracted white clover honey at 12c. Comb honey prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

FOR SALE—12,000 lbs. of choice white clover honey, well ripened, put up in new 5 and 10 lb. pails. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gal. barrels. Samples and price on request. A. I. Root Co., 23 Leonard St., New York City.

HONEY FOR SALE—In 60-lb. tins, water-white orange, 15c; white sage, 14c; extra L. A. sage, 12c; buckwheat, 10c, etc. Hoffman & Hauck, Woodhaven, N. Y.

FOR SALE—Several tons of dark and amber extracted honey for baking, etc., in barrels and 60-lb. cans; comb honey in season. H. G. Quirin, Bellevue, Ohio.

FOR SALE—Very best white sweet clover honey in 60-lb. cans. Can't be beat. Sample, 10c, and the price will interest you; f. o. b. Joe C. Weaver, Cochrane, Ala.

RASPBERRY HONEY—In 60-lb. cans, 2 in a case for $14.40; one in a case, $7.50. Sample by mail, 20c, which may be applied on order for honey. Elmer Hutchinson & Son, Lake City, Mich.

NOTICE TO OUR CUSTOMERS—Our 1922 crop of white clover extracted honey will be ready for the market the last of the month, July. Say how much you can use and when delivery is to be made and we will quote you a price. Forty-six years in the production of extracted honey. None better. E. D. Townsend & Sons, Northstar, Mich.

FOR SALE—We can supply honey to beekeepers or other roadside sellers who may need to buy beyond their own supply, packed as follows: 2½-lb. friction top tin cans, 2 doz in case; 5-lb. friction top tin cans, 1 doz. in case; 10-lb. friction top tin cans, ½ doz. in case; 60-lb. square cans, 1 to case; 60-lb. square cans, 2 to case. We have the following kinds of honey: Standard white, alfalfa, sweet clover, California sage, California orange, light amber, amber. Write for prices. The A. I. Root Co., Medina, Ohio.

HONEY AND WAX WANTED.

WANTED—Honey, section, bulk comb and extracted. Elton Warner, Asheville, N. C.

BEESWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED—Bulk comb and section honey. Correspondence solicited. J. E. Harris, Morristown, Tenn.

WANTED—Honey in ton lots, comb and extracted, of all kinds. Joe Mlinarits, 8927 Keller St., Detroit, Mich.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

WANTED—Beeswax. We are paying 1c and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address so we can identify it immediately upon arrival, and make prompt remittance. The A. I. Root Co., Medina, Ohio.

FOR SALE.

HONEY LABELS—New design. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE—10-inch Root foundation mill, A-1 condition, $40 00. Holloway Bros., Marietta, Okla.

FOR SALE—Used honey cans in cases, good condition. S. T. Fish & Co., 163 W. S. Water St., Chicago, Ill.

HONEY cans and pails; new sixties, 50 cases at 91c per case two cans. The Stover Apiaries, Mayhew, Miss.

FOR SALE—150 beehives, mostly double-walled; price, $2.00 each for the lot. L. F. Howden, Fillmore, N. Y.

FOR SALE—"SUPERIOR" FOUNDATION, "quality unexcelled." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

PORTER BEE-ESCAPES save honey, time and money. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

FOR SALE—Good second-hand 60-lb. cans, two cans to case, boxed, at 60c per case, f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., Cincinnati, Ohio.

SEND for our bargain list of new bee supplies, hives, frames, bottoms, covers, sections, shipping cases, almost everything you want. Some at 50% discount. The Stover Apiaries, Mayhew, Miss.

FOR SALE—80 cases, 60-lb. cans, two in a case, 60c per case. Honey was liquefied with dry heat, leaving the cans in extra fine condition. John C. Bull, 1013 Calumet Ave., Valparaiso, Ind.

FOR SALE—Reversible two-frame Cowan extractor and 20 colonies of bees in standard 10-frame hives and equipment. Harry P. Itnyre, 511 West 10th St., Sterling, Ill.

BEAUTIFULLY located apiary in New Jersey, 25 miles from New York City. New stucco house with all city improvements, fine locality for bees and poultry. Cash, $2000; balance, $6000. Mortgage or will take partnership with reliable party. Inquire 556 Park Ave., West New York, N. J.

WANTS AND EXCHANGE.

ROYAL typewriter, $65.00. Will trade for honey, queens or offer. E. A. Harris, Albany, Ala.

WANTED—A two-frame extractor. L. & L. B. Fasick, R. R. C. Box No. 65, Richmond, Ind.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa, Council Bluffs, Iowa.

MOVING PICTURE OUTFIT—New, cost $250. Sell at $150 or exchange for bees, supplies, two-frame extractor or typewriter. Send offer. Quincy Hart, Gentryville, Ind.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1922 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Son, Hamilton, Ill.

PARTNER WANTED.—Having more bees than I can personally attend to, I want a first-class, all-around apiarist who has had experience in queen-rearing. Prefer man with capital, but would entertain any reasonable offer. Good character, experience, health, good eyesight required, and good queen-rearer preferred. Write fully in first letter, stating qualifications, age, whether married and whether strong and healthy. References exchanged. Either working interest or partnership. First-class outfit with thoroughbred Italian stock, leather-colored, three-banded. Splendid opportunity for queen-rearer. Business well established. C. M. Elfer, St. Rose, La.

BEES AND QUEENS.

NO more package bees this season. J. J. Scott, Crowville, La.

SEE Thagard's ad elsewhere back to pre-war day prices.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

FOR SALE—Colonies Italian bees and equipment. Alvin Buff, Frost, Ohio.

WHEN it's GOLDEN, it's PHELPS. C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

FOR SALE—40 colonies of bees. No disease. J. R. Coulson, Portland, R. D. No. 12, Ind.

REQUEEN with SIMMONS' QUEENS. Prices reduced. Fairmount Apiary, Livingston, N. Y.

$200 for one queen. See larger ad elsewhere. J. M. Cutts & Son, R. D. No. 1, Montgomery, Ala.

WHEN it's quality, service and satisfaction you want to try Pinard. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR SALE—Three-banded Italian queens. Tested, after June 15, $2.00 each. J. D. Kroha, 87 North St., Danbury, Conn.

PHELPS GOLDEN QUEENS will please you. Mated, $2.00; 6, $10.00; or $18.00 a doz. C. W. Phelps & Son, Binghamton, N. Y.

TWO-POUND package bees with untested Italian queen, $5.00; 3 lbs., $7.00. Safe delivery guaranteed. C. H. Cobb, Belleville, Ark.

PRITCHARD QUEENS are the result of years of careful breeding and selection. See ad page 481. Arlie Pritchard, Medina, Ohio.

FOR SALE—Bright Italian queens, 1, $1.00; 12, $10.00; 100, $75.00. Safe arrival guaranteed. T. J. Talley, Greenville, R. D. No. 3, Ala.

HIGH-GRADE Italian queens. Laying, $1.50; tested, $2.50; day-old, 50c. Introduction guaranteed, 75c. James McKee, Riverside, Calif.

FOR quick sale BARGAIN on 150 colonies with 20 acres fertile, well-located land in Florida. Good reason for selling. W. I. Keiter, Cherrydale, Va.

FOR SALE—Golden Italian queens, 1 untested, $1.00; 6 for $5.00; tested, $2.00; hybrids, 3 for $1.00. J. F. Michael, Winchester, R. D. No. 1, Ind.

"SHE-SUITS-ME" queens, line-bred Italians. $1.50 each; 10 to 24, $1.30 each. See back cover of January number. Allen Latham, Norwichtown, Conn.

TRY our northern-bred leather-colored Italian queens for European foul brood at $1.25 each; 6, $7.00; 12, $13.50. Charles Stewart, Johnstown, N. Y.

FOR SALE—Early package bees, nuclei and queens. We handle 1800 colonies. Shipping season March 1 to June 1. Loveitt Honey Co., Phoenix, Ariz.

FOR SALE—July 1, Buck Goldens. 1 queen, $1.00; 6 queens, $5.00; 12 queens, $10.00; virgins, 40c. W. W. Talley, R. D. No. 4, Greenville, Ala.

QUEENS—For summer and fall. Write for prices and guarantee, state quantity desired and when shipment wanted. I can fill your orders. J. L. St. Romain, Hamburg, La.

WE ARE booking orders now for spring delivery for the famous "Colorado Queens." Send your order early so as to be sure to get your queens. C. I. Goodrich, Wheatridge, Colo.

ELTON WARNER'S QUALITY QUEENS—Progeny of his famous Porto Rican breeding stock. Write for price list. 20% off after June 30. Elton Warner Apiaries, Asheville, N. C.

FOR SALE—Three-band Italian queens, select untested, $1.00 each; $9.00 per doz. 2-lb. package with queen, $5.00. Satisfaction guaranteed. W. T. Perdue & Sons, Fort Deposit, Ala.

BEES BY THE POUND — Also QUEENS. Booking orders now. FREE circulars, giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas. E. B. Ault, Prop.

QUEENS AND NUCLEI FOR SALE.—Three-banded Italians, one queen, $1.10; per dozen, $10.00; 2-frame nucleus with queen, $4.50; 3-frame nucleus and queen, $6.00. Will book orders for two months for August and September delivery if wanted at a cut price of 50c on nucleus and 10c on queens. No disease. Orders filled at once. 50 swarms for sale delivered in September and October, at $10.00 each. Thanks in advance. Hickory Shade Apiary, Otterville, Mo.

TRY ACHORD'S BEES and QUEENS. Price list by return mail. W. D. Achord, Fitzpatrick, Ala.

SPECIAL prices on queens and bees. See my ad page 488. Frank Bornhoffer, Mt. Washington, Ohio.

FOR SALE—Three-banded Italian queens, untested, $1.50 each; 6, $8.00. Ready now. Satisfaction guaranteed. Chas. W. Zweily, Willow Springs, Ill.

TRY MY CAUCASIAN OR ITALIAN three-frame nuclei at $5.00 each, with untested queen. Tested, $1.50; untested, $1.00, of either kind. No disease. Peter Schaffhauser, Havelock, N. Car.

FOR SALE—Golden Italian queens, untested, $1.00; 6 for $5.40; 12 or more, 80c each; tested, $1.50 each; select tested, $2.50 each. Safe arrival guaranteed. Sam Hinshaw, Randleman, N. C.

GOLDEN QUEENS that produce large beautiful bees, solid yellow to tip, very gentle and prolific. Untested, $1.25 each; select tested, $3.00 each; breeders, tested, $5.00. Dr. White Bee Co., Sandia, Texas.

FOR SALE—Leather-colored Italian queens, tested, until June 1, $2.50, after $2.00. Untested, $1.25; 12, $13.00. ROOT'S GOODS, ROOT'S PRICES. A. W. Yates, 15 Chapman St., Hartford, Conn.

FOR SALE—Three-banded Italian queens, 1, $1.00; 6, $5.00; 12, $9.00; 100, $70.00, after May 20. We ship only the best. Safe arrival and satisfaction guaranteed. W. C. Smith & Co., Calhoun, Ala.

FOR SALE—My 1922 golden queens, the big yellow kind, none better. Satisfaction guaranteed. Price $1.00 each, or $10.00 per doz. After June 15, 90c each, or $9.00 per doz. E. F. Day, Honoraville, Ala.

FOR SALE—350 colonies of bees with complete extracting equipment, including power extractor, steam boiler, and auto truck, with or without 1922 crop. Scott McClanahan, Parma, R. D. No. 1, Idaho.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, $1.00 each; $10.00 per dozen; $75 per 100. Pure mating, safe arrival and satisfaction guaranteed.

FOR SALE—Pinard's quality of Root's strain of bees and queens. Virgins, 50c. Untested queens, $1.25 each. Larger lots write. Circular free. After July 1, 10% discount. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR SALE—Pure three-banded Italian queens, reared by the Doolittle method from the best honey-producing mothers. $1.00 each; tested, $2.00. I guarantee pure mating and safe arrival. H. N. Boley, Hillsboro, Iowa.

FOR SALE—Golden Italian queens, untested, $1.00; 6 for $5.40; 12 or more, 80c each; tested, $1.40 each. Good honey-gatherers, hardy and gentle. No disease. Safe arrival. Hazel V. Bonkemeyer, Randleman, R. D. No. 2, N. C.

FOR SALE—Unsurpassed Italian queens, ready June 1. Untested, 1, $1.25; 6, $7.00; 12, $12.50; 50, $50.00; 100, $95.00. Tested, 1, $2.00; 6, $11.00. My queens are actually laying before they are sent out. J. D. Harrah, Freewater, Oregon.

BRIGHT ITALIAN QUEENS, $1.00 each, 10% less in dozen lots. Pure mating, safe arrival and reasonable satisfaction guaranteed in U. S. and Canada. Write us for prices on package bees. We have them in season. Graydon Bros., Rt. 4, Greenville, Ala.

HEAD your colonies with Williams' Italian queens of quality and get more pleasure and profit from your bees. They produce bees that are gentle, hardy and hustling. Descriptive circular free. Select untested, 75c each. P. M. Williams, Ft. Deposit, Ala.

ORDERS booked now for spring delivery, 3-frame nucleus and queen, $6.50; select tested, $7.50; Dr. Miller's strain. No pound packages. Low express rates and quick transit north. 10% with order. S. G. Crocker, Jr., Roland Park, Baltimore, Md.

SPICER'S three-band Italian queens by return mail. If you are interested in improving your stock and getting larger returns from your bees, head your colonies with these queens. Untested, $1.00; 6, $5.50; 12, $10.00; tested, $2.00 each. Robt. B. Spicer, Wharton, N. J.

FOR SALE—Italian queen untested, $1.25 each; 6 for $7.00; 12 for $13.50; tested, $2.00 each. Bees by the pound shipped by express, one-pound package with queen, $3.75; two-pound package with queen, $5.75; three-pound package with queen, $7.50. Safe delivery and satisfaction guaranteed. R. B. Grout, Jamaica, Vt.

FOR SALE—DEPENDABLE GOLDEN ITALIAN QUEENS add beauty to your bee quality. Virgins, 60c; 5 for $2.50; untested, $1.00; 6 for $5.00; select untested, $1.50; 6 for $6.50; tested, $2.50; 5 for $10.00; selected, $3.00; breeders, $5.00. Safe arrival and quality guaranteed. S. H. Hailey, Pinson, Tenn.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Our aim is not quantity but quality. Our first consideration is to give perfect satisfaction. Untested, $1.50 each; 6 for $8.00; tested, $2.00 each; select tested, $3.00 each. Prof. W. A. Matheny, Ohio University, Athens, Ohio.

BALANCE of season we will furnish a 2-lb. package of our three-banded hustlers with a select untested queen for $4.75; 25 or more, $4.50 each. Select untested queens from our best breeders. $1.00 each; $10.00 per doz. Tested, $1.50 each; $15.00 per doz. Caney Valley Apiaries, J. D. Yancey, Mgr., Bay City, Texas.

FOR SALE—Golden Italian queens and bees, untested, 1 queen, $1.00; 1 dozen, $10.00; 100, $75.00. 2-lb. package with queen, $5.00; 1-lb. package with queen, $3.00; 12 or more, 5% off. 2-frame nucleus with queen, $5.00; 15 or more, 5% off. Safe arrival and satisfaction guaranteed. J. F. Rogers, Greenville, R. D. No. 3, Ala.

CONNECTICUT QUEENS, highest grade three-banded Italians. Untested, $1.00 each; 6, $5.50; 12, $10; 50, $40; 100, $75. Two lbs. of bees with queens, $4.00; 3 lbs. with queen, $6.00. Day-old virgin queens, 40c each; 3 for $1.00. First-class stock and satisfaction guaranteed. No disease here. Conn Valley Apiaries, A. E. Crandall, Berlin, Conn.

FOR SALE—Golden Italian queens—good queens at low price. Untested, $1.00; 6 for $5.40; 12 or more, 80c each; tested, $1.50 each; select tested, $2.50 each. No disease of any kind. Bees very gentle and good honey-gatherers, not apt to swarm unless crowded for room. 18 years a queen-breeder. D. T. Gaster, Randleman, R. D. No. 2, N. C.

LARGE, HARDY, PROLIFIC QUEENS—Three-band Italians and Goldens. Pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. After June 1 prices as follows: Untested, $1.25 each; 6 for $7.00; select untested, $1.50 each; 6 for $8.50; select tested, $3.00 each. Special prices on larger quantities. Queens clipped free on request. Health certificate with each shipment. Buckeye Queens, Zoarville, Ohio.

PACKAGE BEES—$1.50 per pound. Untested Italian or Carniolan queens, $1.25 each. Circular free. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

DEPENDABLE QUEENS—Golden or three-banded, after June 1: 1, $1.50; 6, $8.00; 12, $15. Safe arrival and satisfaction guaranteed. Send for circular. Ross B. Scott, La Grange, Ind.

COLORADO HEADQUARTERS for QUEENS—Northern-bred leather-colored three-band Italians. Safe arrival guaranteed. Booking orders now for June 1st delivery. Send for circular and price list. Loveland Honey & Mercantile Co., Loveland, Colo.

THREE pounds of bees, shipped on a Hoffman frame of brood and honey, with an untested Italian queen for $6.00. No disease, satisfaction and safe arrival guaranteed. 25% books your order for April and May shipments. E. J. Beridon, Jr., Mansura, La.

SPECIAL FOR JULY ONLY—One select untested three-banded queen, 50c, one only to each customer. Three-frame nuclei with select untested queen, $5.00; select untested three-banded queens, six or more, 75c each. Tupelo Honey Co., Columbia Ala.

TESTED QUEENS—One-year-old tested three-banded Italian queens, descended from the famous Moore strain. Were reared in full colonies and are very fine queens. Price, $1.50 each; 6 for $8.50; 12 for $16.00. Safe arrival and satisfaction guaranteed. Elmer Hutchinson & Son, Lake City, Mich.

GOLDEN ITALIAN QUEENS—Bred from finest strain in U. S. Mated to select drones. THEY POSSESS THE QUALITIES WHICH MAKE BEEKEEPING PROFITABLE. Untested, 75c; dozen, $7.50; virgins, 25c; tested, $1.50. Safe arrival and satisfaction guaranteed. Crenshaw County Apiary, Rutledge, Ala.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness and perfect markings. Price, after July 1, $1.25 each; 12 $1.00 each. Special prices on larger orders. Send for circulars. J. H. Haughey Co., Berrien Springs, Mich.

CALIFORNIA QUEENS—100% perfect, large vigorous Italians, guaranteed layers. They are making a hit as proven by repeated orders and letters of appreciation. Am building a name and reputation. Try at least one. You will surely want more then. Price reduced. Select untested, 1, $1.00; 6, $5.50; 25, 90c each. H. Peterman. R. F. D., Lathrop, Calif.

I EXPECT to be ready to start shipping 3-lb. packages of bees with 1 frame, 1 untested queen at $6.00; 2-frame nuclei with untested queen, $4.50, about April 15. Young tested queen, 50c extra, or $1.50 each. I think I was the second to ship packages of bees from this state and know how to serve customers. F. M. Morgan, Hamburg, La.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you want. They are GREAT HONEY-GATHERERS. BEAUTIFUL and GENTLE. Virgins, $1.00; mated, $2.00; 6 for $10.00, or $18.00 per doz.; tested, $5.00. Breeders, $10.00 to $20. Safe arrival guaranteed only in the U. S. and Canada. C. W. Phelps & Son, Binghamton, N. Y.

FOR MAY DELIVERY—One vigorous Italian queen, one frame emerging brood, one pound bees, price complete, $5.00. Additional pound bees, $1.00. Additional frame of brood, $1.00. Banat mixed queens and bees 5% discount. After May 25 10% discount on all. Safe arrival guaranteed. Send 10% to book order. T. W. Livingston, Norman Park, Ga.

SPECIAL PRICE IN AUGUST. Latham will mail untested queens at $1.00 each during August, if order is received three weeks in advance of mailing date. Allen Latham, Norwichtown, Conn.

HOLLOPETER'S ITALIAN QUEENS are bred up to a standard and not down to a price, yet price is low where quality and service count. Select untested each, $1.25; 6, $7.00; 12, $13.00; 25, $25.00. Write for mailing date and price on larger lots for requeening. Pure mating, no disease, safe arrival and satisfaction guaranteed. J. B. Hollopeter, Rockton, Pa.

LAST fall I had selected and tested six queens. Will use them as breeders this season in my queen yard. Their surplus honey capacity is from 216 lbs. to 288 lbs. each. I guarantee that every queen bought of me in 1922 is to be the daughter of one of these queens. Bees are three-banded. Mated, in June, $1.25 each; 6, $7.00; 12, $13.50; 25 or more, $1.00 each. After July 1, $1.00 each straight. Julius Victor, Martinsville, N. Y.

FOR SALE—Three-banded queens and bees. Dr. Miller and my own stock. Three-frame nuclei and queen, $5.50; 1 lb. bees and queen, $2.75; 2 lbs. and queen, $5.00; 3 lbs. and queen, $6.25. All good empties returned at my charges. Queens. $1.25 each; 6 for $7.00; 12 for $13. 24 and over at $1.00 each. Reared in the Hubam black belt sweet clover section. Scotts Sta., Ala., by Curd Walker, queen-breeder.

GOOD queens advertise themselves. It takes expensive advertising to sell poor queens, and if you don't believe it try it. We believed in former years we had the best three-banded queens obtainable. We still believe it. Our customers also tell us the same. Try a few. We have dropped the price in reach of all this year. We will have a few virgins for 50c when we have a surplus of them. We can furnish either from imported or Americanized mothers. Untested, $1.00; selected, $1.25; tested, $2.00; selected, $2.50. F. M. Russell, Roxbury, Ohio.

FOR SALE—250 to 350 colonies of fine Italian bees on good straight L combs with a full equipment of supplies for extracted-honey production. Also 47 acres land in Harrison County, Iowa, near town; has about 20 acres fine natural basswood grove. Has good improvements, especially for beekeeping. Probably as good an equipment as there is in the state. This is a good paying business, with outyards already established, everything complete. Can give long time on part of the price, but would require $8000 or $9000 to swing it. Any one having that much capital to invest in a dandy country home and a paying business, will find it by addressing E. S. Miles & Son, Dunlap, Iowa.

MISCELLANEOUS.

MEDICINAL roots and herbs are very profitable to grow. We especially recommend growing Golden Seal which with good care will yield as high as $10,000 per acre for each crop. It takes several years to mature but will average $1000 a year. Special Crops, a monthly paper, tells how. Sample copy, 10c. $1.00 per year. Address Special Crops Pub. Co., Box "G," Skaneateles, N. Y.

HELP WANTED.

WANTED—Man with some experience to work in our apiaries. State age, experience and wages. Answer fully in first letter. The Rocky Mountain Bee Co., Box 1319, Billings, Mont.

WANTED—Experienced beemen and helpers, able-bodied, willing workers. Operate over 1500 colonies in Texas and Arizona. Give age, habits, weight, height, former employment, experience. Reference and wages wanted. W. J. Stahman, El Paso County, Flint, Texas.

Bee Supplies

Send us your orders for honey containers NOW.

—Special Prices on—

TIN AND GLASS HONEY CONTAINERS

2½-lb. Cans, per 100	$4.25
5 -lb .Pails, per 100	7.00
10 -lb. Pails, per 100	10.50
60 -lb. Sq. Cans, per case of 2	1.25
2½-lb. Cans, per case of 24	1.25
5 -lb. Pails, per case of 12	1.10
10 -lb. Pails, per case of 6	.90

GLASS JARS.

8-oz. honey capacity, case of 24	$1.15
16-oz. honey capacity, case of 24	1.35
32-oz. honey capacity, case of 12	1.20

Write for prices on large quantities, stating number and sizes wanted.

Send us a list of your requirements of BEE SUPPLIES, and we will quote you prices that are right.

A. H. RUSCH & SON CO.,
REEDSVILLE, WIS.

NEW ENGLAND

Beekeepers will find a complete line of the best supplies here. Send in your order early and be ready for the harvest. Remember this is the shipping center of New England. Write for new catalog.

H. H. JEPSON
182 Friend Street. BOSTON 14, MASS.

BEES—ITALIAN BEES—BEES

Full colonies with Italian queen at $15; 2 for $25. 3-frame nucleus with Italian queen at $6.50. 3-lb. package with Italian queen at $6.50. No disease. Safe arrival and satisfaction guaranteed.

VAN'S HONEY FARMS
Van Wyngarden Bros., Props. Hebron, Indiana.

QUEENS — QUEENS

LARGE, leather-colored 3-banded Italian queens; 10-years selection, bred for honey-gathering; gentle, hardy and long-lived. Price: Select untested, 1, $1.25; 6, $6.50; 12, $12. After July 1: 1, $1; 6, $5; tested, $1.50 each. Write for price on large orders. Free booklet, "How to Transfer, Get Honey and Increase."

J. M. GINGERICH, KALONA, IOWA.

INDIANOLA APIARY offers Italian Bees and Queens for following prices: Untested Queens, $1.00 each; Tested Queens, $1.50 each. Bees, per lb., $2.00. Nucleus, $2.00 per frame. No disease. Bees inspected.

J. W. SHERMAN,
Valdosta, Georgia.

Special Notice by A. I. Root

My article in the last issue, "Mend Your Own Tinware," has brought to light some wonderful developments which, I regret to tell you, must be put over until August for lack of space in this issue.

PATENTS Practice in Patent Office and Court.
Pat. Counsel of The A. I. Root Co.
CHAS. J. WILLIAMSON,
McLachlan Bldg., Washington, D. C.

Let us tell you about the California Gold Medal Queens
The Queens with the Pedigree.

Our hardy, immune, prolific strain of 3-banded leather-colored Italians. Developed from the world's best strains by careful selection and tested under California conditions for five years, with excellent results. My speciality will be breeding stock and every queen produced will receive my personal care and inspection. Now receiving orders for the season of 1922, which will be filled in the order of their receipt. Write for catalog and prices.

THE COLEMAN APIARIES
GEO. A. COLEMAN, Prop.
2649 Russell St., Berkeley, California.

MASON BEE SUPPLY COMPANY,
Mechanic Falls, Maine.

From 1897 to 1922 the Northeastern Branch of The A. I. Root Company.

PROMPT AND EFFICIENT SERVICE

BECAUSE—Only Root's Goods are sold.
It is a business with us—not a side line.
Eight mails daily—Two lines of railway.
If you have not received 1922 catalog send name at once.

Goldens the Best

14 years in business should give you best queens possible. Untested, $1, or 6 for $5; in lots of 25 or more, 75c each. Virgins, 40c each, or 3 for $1. Satisfaction and promptness my motto.

R. O. COX, Box 25, RUTLEDGE, ALABAMA.

A-T-T-E-N-T-I-O-N!

OHIO AND WEST VIRGINIA BEEKEEPERS

We are most favorably located for serving Central, Southern and Eastern Ohio, and also West Virginia. No matter where you are, full stocks, best shipping facilities and prompt attention will insure satisfaction. Free catalog.

MOORE & PEIRCE
Zanesville, Ohio—"Beedom's Capital."

ROOT QUALITY BEES AND BEEKEEPERS' SUPPLIES.

Bees in the hive, in packages, and nuclei, three-banded leather-colored Italian queens. Let a beekeeper of long standing serve you in your requirements for 1922. Catalog on request.

O. G. RAWSON,
3208 Forest Place, East St. Louis, Illinois.

"Best" Hand Lantern

A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. **Agents wanted. Big Profits. Write for Catalog.** THE BEST LIGHT CO.
306 E. 5th St., Canton, O.

Established 1885.
Write us for catalog.

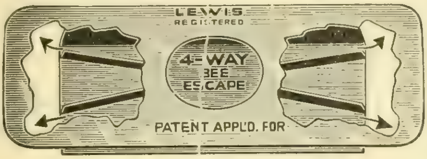
BEEKEEPERS' SUPPLIES

The Kind You Want and the Kind That Bees Need.

We have a good assortment in stock of bee supplies that are mostly needed in every apiary. The A. I. Root Co.'s brand. Let us hear from you. Information given to all inquiries. Beeswax wanted for supplies or cash.

John Nebel & Son Supply Co.
High Hill, Montgomery Co., Mo.

LEWIS 4-WAY BEE ESCAPES



Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal. Price each 18c prepaid. Made by

G. B. LEWIS COMPANY, Watertown, Wis., U. S. A.
For Sale by all Dealers.

Honey Containers

We have some interesting prices to offer on honey containers; send us a list of your requirements and let us quote you our prices.

2½-lb. cans in reshipping cases of 24 and crates of 100 and 500.
5-lb. pails in reshipping cases of 12 and crates of 100 and 200.
10-lb. pails in reshipping case of 6 and crates of 100.
1-gallon square or oblong cans with 1¾-inch screw cap in boxes of 6.
1-gallon square or oblong cans with 1¾-inch screw cap in crates of 100.
60-lb. square cans with 1¾-inch screw cap in cases of 2 cans.
16-oz. round glass jars in reshipping cases of 2 dozen.
6½-oz. tin top tumblers in reshipping cases of 4 dozen.
Shipping cases for comb honey for any style sections in the 24-lb. or 12-lb. size.
Send for our catalog showing full line of Bee Supplies.

AUGUST LOTZ CO.
BOYD, WISCONSIN.

Queens, More and Better Queens

Thrifty Three-band Stock. If it's ''Hustlers'' you want, get ours.

One customer from Indiana writes: ''Some time ago I bought queens from you and I want to tell you that they were wonderful; 10 swarms average 220 lbs. extracted.''

Another from Ontario says: ''Your shipment of 20 2-frame nuclei reached me in fine condition, and I am much pleased with them.'' (Later he writes.) ''I may add to what I said before, that the bees are very handsomely marked and very gentle, and I never saw bees build up so fast as your two-frame nuclei, in spite of very unfavorable weather ever since they arrived.''

We can fill your orders by return mail at the lowest possible price that quality queens can be reared and delivered to you for, and with a guarantee that we will back up.

Guarantee: Freedom from disease, pure mating, safe arrival and complete satisfaction. Send full amount with order to keep down unnecessary correspondence and bookkeeping, and be assured of getting your queens as and when wanted.

PRICES: Untested, 1 to 12, $1.00 each; 13 to 25, 90 cents each; 26 to to 100, 80 cents each. Select untested, add 25c per queen. Tested queens and breeders quoted on application.

JENSEN'S APIARIES

R. F. D. NO. 3 **CRAWFORD, MISS.**

Another $200.00 Queen

A descendant of the Root's famous two-hundred-dollar queen was shipped by us to Mr. C. B. Hamilton of Michigan on April 15, 1921, with a two-pound package of bees and produced 577 finished sections of comb honey that sold for $168.00. (See Gleanings for March, page 167.) Mr. Hamilton says this queen kept 20 Standard Hoffman frames filled with brood during the season. THIS BREAKS ALL RECORDS SO FAR.

We have secured this queen for a breeder and we are now booking orders for her queens at the following prices, safe arrival, satisfaction and freedom from disease guaranteed.

1 untested	$ 1.00
12 untested	10.00
1 select untested	1.50
12 select untested	13.50

We will have no tested queens from this one ready for shipment before July 1, but can supply tested queens of the same strain at any time.

1 tested	$ 1.75
12 tested	16.00
1 select tested	2.25
12 select tested	20.00

J. M. CUTTS & SON, R. F. D. 1, MONTGOMERY, ALA.

QUEENS

Nordan's Three-Banded Italian Queens and Bees (Three-Banded Only)

BEEKEEPERS: If you have one colony or five thousand I want you to give my superior strain of three-banded Italians a trial. I am fixing the price right so you can. I am not a new man come out; I have been in business almost all of my life for honey production and improving my strain. I have selected and bred my strain from the finest mothers in my yards which were selected for all of the good qualities. For over a quarter of a century I spared neither labor nor money in developing my strain until now I can put queens and bees on the market which I know are surpassed by none and I guarantee that money cannot buy any better in the U. S. A. When you introduce my queens, beekeepers, you can feel assured you have a bee that cannot be surpassed by any in U. S. A., which is backed by over a quarter of century improving and selecting from the finest mothers and mated to drones that are selected.

NOTICE—My strain are guaranteed immune to Bee Paralysis. I have found the foundation of Bee Paralysis, which is in the queens, and now after years of selecting and testing I guarantee my strain resistant to it. Bee Paralysis is prevalent over the South. I will gladly replace any bees I ship that Bee Paralysis breaks out in.

QUALITY AND SATISFACTION.—Each and every queen I send out, if it be one or five thousand, is guaranteed to give absolute satisfaction; otherwise advise me and I will gladly send more to take their places. You don't run any risk. A record of over a quarter of a century of fair and honest dealings. You get your money's worth as nearly as possible plus a very small profit, and my price is fixed to a very small profit.

All queens select; if they do not prove up pleasing to the eye, they are not shipped. I do not price a select untested and ship an untested. I give the greatest care possible to produce the finest queens possible.

PRICES ON QUEENS AND PACKAGES.

	1	6	12	100
Select Untested	$0.75	$4.25	$8.00	$60.00
Tested	1.00	5.70	10.80	85.00

Packages Full Weight.

1-pound package with queen	1 to 12, $2.35 each; 12 or more, $2.30
2-pound package with queen	1 to 12, $3.85 each; 12 or more, $3.80

I can make shipment when you want them of either queens or packages.
I appreciate your business large or small.
Reference: Alabama Bank and Trust Co., Montgomery, Alabama.

M. S. NORDAN - MATHEWS, ALABAMA

Queens - Golden - Queens

Have you secured all you need? I have them as fine as you can secure anywhere at a reasonable price. Untested, $1.00; six, $5.50; 12, $10. If they don't give you satisfaction and you write me, I will make it satisfactory to you.

E. A. SIMMONS, GREENVILLE, ALA.

Merrill's Quality-Bred Italian Queens

Famous Three-banded and Golden Queens.

They are pleasing others; why not you? I sell good queens for less. Try them and see for yourself.

1 Untested Queen	$1.00
6 Untested Queens	4.75
12 Untested Queens	9.00

These are selected queens, mated, and laying. Guaranteed to please you.

G. H. Merrill

Route 5. GREENVILLE, S. C.

75c EACH

One or more SELECT Untested Three-Banded Italian Queens. No poor-appearing queen will be sent. A satisfactory sale guaranteed. No disease.

D. W. HOWELL, SHELLMAN, GEORGIA.

QUEENS

OUR OLD RELIABLE THREE-BANDED ITALIANS ARE HONEY GETTERS.

They are gentle, prolific, and very resistant to foul brood. Orders booked for one-fourth cash. Safe arrival guaranteed. Circular free.

PRICES

	1	6	12
Untested	$1.00	$5.50	$10.00
Select Untested	1.25	6.50	12.50
Tested	2.25	12.50	24.00
Select Tested			$3.00 each

See our Dec. and Jan. Advertisement.

JOHN G. MILLER

723 C Street, Corpus Christi, Texas.

ATTENTION, PRODUCERS! NEW HONEY CROP

We are ready to receive your new crop advices, sending us samples and state price wanted, how packed, and quantity can ship. Terms, cash on arrival.

HOFFMAN & HAUCK, INC., WOODHAVEN NEW YORK

Lockhart's Silver-gray Carniolans

"LINE BRED" for the past 34 years. They are VERY hardy, gentle, prolific, great workers, and builders of VERY WHITE comb, and use mostly wax in place of propolis. Prices of queens for 1922: Untested queens, $1.00; select untested, $1.50; tested, $2.00; select tested, $3.00. Breeders, $5.00, $10.00. Safe arrival guaranteed in U. S. and Canada. No foul brood here.

F. A. LOCKHART & COMPANY, LAKE GEORGE, NEW YORK

When You Think of Queens, Think of

Thagard's Italian Queens

Bred for Quality

Each day the demand grows greater for our imported Three-Bands. Why? Because for the next few years there will be no new blood imported from Italy. In buying our queens you are assured of getting imported stock and free of disease. Every queen is bred and selected from our best breeders. They are hardy, gentle, disease-resisting and honey producers. Try some of our queens, test them out against any you may obtain anywhere, and NOTE THE RESULTS.

Untested Queens, each—1 to 11, $1.00; 11 to 49, 85c;
49 to 99, 75c; 100 or more, 70c.

The V. R. Thagard Company, Greenville, Alabama

NEWMAN'S QUEENS

Originated from the world-famous Moore strain of Italians. Absolutely first quality and fully guaranteed, no disease. Satisfaction and safe arrival.

Untested: 1, $1.25; 6, $6.00; 12, $11.00.
Sel. Unt.: 1, $1.75; 6, $8.00; 12, $15.00.

Circular free.

A. H. NEWMAN, Queen-Breeder.
Morgan, Kentucky.

Queens of Quality

From Tennessee

3-BAND ITALIANS ONLY.

Untested, $1.00 each; six for $5.00. $9.00 per dozen. Now shipping by return mail. Circular free.

J. I. BANKS, Dowelltown, Tenn.

QUEENS OF

MOORE'S STRAIN

OF ITALIANS PRODUCE WORKERS

That fill the supers quick
With honey nice and thick.

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc. I am now filling orders by return mail. Untested queens $1.25; 6, $6.50; 12, $12. Select Untested, $1.50; 6, $8.00; 12, $15. Safe arrival and satisfaction guaranteed.

J. P. MOORE, Queen Breeder
Route 1, MORGAN, Kentucky.

Michigan Bred Three-Band Italian Queens, Untested.

July Delivery.
1 to 9, $1.40 ea.; 10 to 100, $1.30 ea.
August Delivery.
1 to 9, $1.25 ea.; 10 to 100, $1.15 ea.
Select Tested after June 20, $2.00 ea.
Virgins after June 1st, 1 to 9, 60c ea.; 10 up, 55c ea.

If you must have untested during June send elsewhere, as old customers have ordered my June outfit of untested.

D. A. DAVIS, Birmingham, Michigan.

I. F. MILLER'S STRAIN

ITALIAN QUEEN BEES

From my best SELECT BREEDERS; gentle, roll honey in, hardy, winter well, not inclined to swarm, three-banded, 28 years' breeding experience. Satisfaction guaranteed. Safe arrival in U. S. and Canada.

1 Untested, $1.25; 6, $7.00; 12, $12.00.
1 Sel. Unt., $1.50; 6, $8.00; 12, $14.00.

I. F. MILLER,
Brookville, Pa., 183 Valley.

REDUCED PRICES

Beginning July 1st, we will sell queens the balance of the season at the following prices:

Untested: One to 9, 90c each; 10 to 19, 80c each; 20 or more, 75c each. Tested: $1.25 each. Three-banded Italians.

There are no better queens than these. They have again led the country in the amount of surplus honey stored.

MURRY & BROWN,
Mathis, Texas.

Send orders to H. D. Murry, Mathis, Texas.

SCOTT QUEENS ARE GOOD QUEENS

MY QUEENS ARE GETTING RESULTS.

Among my hundreds of colonies and for my customers. One writes: "Dear Mr. Scott: Please book me for ½ doz. queens. Those I got from you last season have made 150 lbs. comb honey each so far this season. Yours truly."—(Name on request.)

GOLDEN OR THREE-BANDED QUEENS.

After July 1: One, $1.25; six, $7.00; dozen, $13.00. They are bound to please. Pure mating and safe arrival. Prompt shipments. Circular on request.

ROSS B. SCOTT, LA GRANGE, INDIANA.

FREE QUEENS

3-Banded *Goldens*

For July to make new customers we offer our fine strain of honey-gatherers at the lowest prices possible, and for ten of the highest honey records made from colonies headed with our queens, we will give one fine tested 3-banded or Golden queen free to each. For quick service send us your order. Now is the time to requeen.

Quality Queens—July Prices.

Untested, 1 to 12..........	$0.85 each
Sel. Untested, 1 to 12......	1.15 each
Sel. Tested	2.00 each

Wings clipped free on request. Entire satisfaction and safe arrival guaranteed in U. S. and Canada.

Ohio Valley Bee Company
CATLETTSBURG, KY.

ONLY

90c A QUEEN

QUEENS BY RETURN MAIL

Mr. Beekeeper:—We have the stock, equipment and experience, and can give you prompt, satisfactory service. We are not going to say that we have the best bees in U. S. A., but we do say that we have as good as can be bought for the money. Give NORMAN BROS.' 3-banded Italian bees and queens a trial and see for yourself. You risk not a brown penny; if you are not satisfied, notify us and we will replace or refund your money. Isn't this a fair proposition to any one that purchases queens and bees? Our bees are hardy, prolific, gentle and honey-gatherers.

Prices:	1	6	12	100
Untested Queens	$0.90	$5.00	$9.00	$70.00
Select Untested	1.15	6.00	11.00	85.00
Tested Queens...	2.00 each			
Select Tested...	2.50 each			

One 2-lb. package bees, $3.00; 12 or more, $2.85 each. Add prices of queens wanted. We guarantee pure mating, safe arrival and free from all diseases.

Norman Bros. Apiaries
NAFTEL, ALABAMA.

Big Reduction

--ON--

Bee Supplies

Shipping cases..........	$30.00 per 100
Slotted section-holders...	$3.00 per 100
Sections, 1⅞, No. 1...	$10.00 per 1000
Job lots of frames, regular size..............	$3.00 per 100
Standard Hoffman frames, 9⅛ deep	$4.50 per 100
Unspaced wedged top-bar frames, 9⅛ deep...........	$2.75 per 100

Send for Catalog and Price List.

CHARLES MONDENG
146 Newton Avenue N. and
159 Cedar Lake Rd.
MINNEAPOLIS, MINN.

That Pritchard Queens

AND

Pritchard Service

made a hit last season is proven by the many letters of appreciation and repeated orders received. This year we are BETTER PREPARED WITH a LARGER OUTFIT AND REDUCED PRICE.

THREE-BANDED ITALIANS.

Untested	$1.25 each; 6 for $7.00
Select Untested.	$1.50 each; 6 for $8.50
Select Tested	each $3.00

Queens clipped free on request. We are booking orders now. Send yours at once and we will do our best to ship on date you desire. Acknowledgment and directions for introducing sent on receipt of order. Safe arrival and satisfaction guaranteed. Untested ready about June 1.

ARLIE PRITCHARD
R. F. D. No. 3. MEDINA, OHIO

"Marugg's Special"

IMPORTED MOWING BLADES

And Sickles with DANGEL cutting edge "THE MARUGG SPECIAL" are praised by thousands of users in the United States. Used by leading apiarists. Write for particulars to THE MARUGG COMPANY, Dept. B, TRACY CITY, TENN.

HONEY

We are in excellent position to serve beekeepers who do not produce enough Honey to supply their trade. We have a big stock of fine table honey of various grades always on hand.
In 60-lb. Tins Crystallized—Water White Orange, 15c; White Sage, 14c; Extra L. A. Sage, 12c; Buckwheat, 10c.

GLASS AND TIN HONEY CONTAINERS.

2½-pound cans, 2 dozen reshipping cases	$1.45 case	crates of 100, $4.50
5-lb. pails (with handles), 1 dozen reshipping cases	$1.35 case	crates of 100, $7.00
10-lb. pails (with handles), ½ dozen reshipping cases	$1.10 case	crates of 50, $5.25
60-lb. tins, 2 per case	New, $1.20 case	used, 25c

White Flint Glass, With Gold Lacquered Wax Lined Caps.

8-oz. honey capacity	$1.50 per carton of 3 doz.
16-oz. honey capacity	$1.40 per carton of 2 doz.
Qt 3-lb. honey capacity	$1 per carton of 1 doz.

HOFFMAN & HAUCK, Inc.
WOODHAVEN, NEW YORK.

CENTRALLY LOCATED TO SERVE NEW ENGLAND BEEKEEPERS.

Root QUALITY BEE SUPPLIES

ORDERS FILLED PROMPTLY.

—

CATALOG ON REQUEST.

F. COOMBS & SONS, BRATTLEBORO, VERMONT

DON'T DELAY---GET OUR PRICES

WE SAVE YOU MONEY

"Falcon"

SUPPLIES --- QUEENS --- FOUNDATION

W. T. FALCONER MFG. COMPANY
FALCONER (Near Jamestown) NEW YORK
"Where the best beehives come from."

QUIGLEY QUALITY

Italian Queens and Bees are produced by double grafting, producing queens of superior quality and long-lived bees, filling your big hives with bees. Hustlers, hardy, wintering on summer stands. No disease; 36 years in this location. Purity and satisfaction guaranteed.

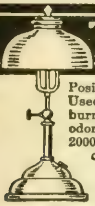
Untested—Each, $1.25; 6 for $7.00; 12 for $12.00. Select Untested, add 50c each extra. Tested, $2.00 each.

Send for circular.

E. F. QUIGLEY & SON
UNIONVILLE, MISSOURI.

PATENTS---TRADEMARKS

I offer prompt, personal and expert professional service. 10 years' experience. Write for terms. **LESTER SARGENT, Patent Attorney, 524 Tenth St., N. W., Washington, D. C.**



The "BEST" LIGHT

Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles. 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog. AGENTS WANTED EVERYWHERE.

THE BEST LIGHT CO.
306 **E. 5th St., Canton, O.**

$797 Buys This 7-Room Home

Price includes lumber, millwork, paint, hardware, roofing, etc. House contains large living room, dining room, kitchen, three bedrooms with closets and bath. Materials cut to fit. Our system makes it easy for anyone to erect this attractive home. Send for special circular No. 2103

THE ALADDIN COMPANY
BAY CITY MICHIGAN

World's Best Roofing at Factory Prices

"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofing, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Save money—get better quality and lasting satisfaction.

Edwards "Reo" Metal Shingles

have great durability—many customers report 15 and 20 years' service. Guaranteed fire and lightning proof.

Free Roofing Book

Get our wonderfully low prices and free samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No. 183

LOW PRICED GARAGES

Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles.

THE EDWARDS MFG. CO.
733-783 Pike St. Cincinnati, O.

FREE Samples & Roofing Book

Better Way to Garden

Don't do garden work the slow back-breaking way. You can grow a far better garden, easier and with much less time and work.

BARKER

WEEDER, MULCHER AND CULTIVATOR

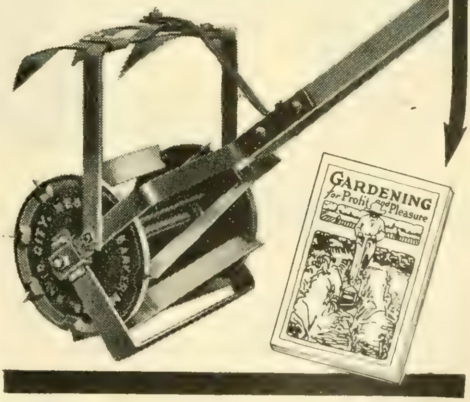
THREE MACHINES IN ONE

Simply push the BARKER along the rows (like a lawn mower). Eight blades revolving against a stationary underground knife destroy the weeds and in same operation break up the surface crust into a **level, porous, moisture-retaining mulch.** Aerates soil. Intensive cultivation. "Best Weed Killer Ever Used." Has leaf guards, also shovels for deeper cultivation. A boy can run it—do more and better work than 10 men with hoes.

Write Us Today
for FREE Booklet.

Let us tell you about this machine and how to raise bigger, better gardens—make gardening a pleasure. A valuable book, illustrated. Gives prices, etc. A card brings it. Write us today. Use coupon below.

BARKER MFG. CO.
Box 23 DAVID CITY, NEB.


GARDENING for Profit and Pleasure

Barker Mfg. Co., Box 23, David City, Neb.

Gentlemen: Send me postpaid your free booklet and Factory-to-User offer.

Name ....

Town ....

State................ Box or RFD...........

QUEEN PRICES REDUCED!

Owing to my discovery of a law in queen-rearing heretofore unknown to me, whereby practically all queen-cells are accepted by bees in nuclei, rendering queen production more economical, I want to share this saving with my customers in the form of a price reduction to take effect July first. This new feature works in perfect harmony with bee nature and readily accepted cells are the result. The emerging virgin is gladly received by the bees and given the best of care, so that she develops and mates from one to two days earlier than was the case before I employed this new law. This feature and all others used by me will be fully explained in my new book on Queen-Rearing that will be published some time before next January.

Owing to these new methods, I shall be able to **fill all orders promptly** and guarantee every queen to be first class in every respect and will gladly replace any that proves otherwise.

Our original stock was obtained from Mr. Doolittle, and since that time I have carefully selected for prolificness, vigor and color, at the same time keeping the bees as gentle as is possible without their losing any of their pep.

"Alice, the queen I got from you, has produced my finest colony out of fourteen competitors. I have failed to find the equal of her bees for work, size, beauty and gentleness. Her prolificness is wonderful. Twenty frames are kept filled with brood and two supers filled with honey since May 1, one month." —Thornton Bogert, Cincinnati, Ohio.

A card will bring our queen catalog and folder describing our introducing cage that removes the uncertainty in queen introduction.

PRICES AFTER JULY FIRST.

1 to 4 inclusive	$2.00 each
5 to 9 inclusive	$1.95 each
10 or more	$1.90 each
Breeders	$10.00 each
Introducing Cages	75 cents each

JAY SMITH

ROUTE THREE **VINCENNES, INDIANA**

FOREHAND'S THREE BANDS

The Thrifty Kind

For over a quarter of a century our bees and queens have been giving satisfaction to America's greatest honey producers.

Careful selecting has brought our strain of bees up to a standard **SURPASSED BY NONE BUT SUPERIOR TO MANY.** We are constantly selecting to improve the thriftiness, hardiness, gentleness and beauty of our bees.

Our queens are bred from mothers imported from Italy in the spring of 1921, or the daughters of queens imported in 1920. Cross breeding with our domestic strain lightens the color of the imported bee and brings them up to our standard, which is surpassed by none but superior to many. We breed into them thriftiness and hardiness.

We guarantee our bees to be purely mated and to give satisfaction the world over. Safe arrival is guaranteed in the United States and Canada.

——PRICES——

UNTESTED QUEENS EACH—1, $1.00; 6 to 11, 90c; 12 to 49, 85c; 50 to 99, 75c; 100 to 299, 70c; 300 up, 65c.

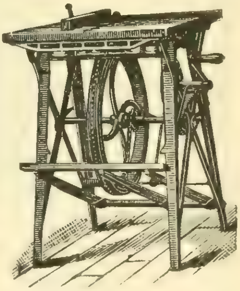
POUND BEES—1 one-lb. pkg., $2.00; 25 and over, $1.90; 1 two-lb. pkg., $3.50; 25 and over, $3.25; 1 three-lb. pkg., $5.00; 25 and over, $4.75. Catalog sent free.

W. J. Forehand & Sons, Fort Deposit, Ala.

MOTT'S NORTHERN-BRED ITALIAN QUEENS

Are all selected queens this season. After July 1st, $1.00 each. Sel. Guaranteed pure mated, or replace free, $1.50. Sel. Tested, $2.50. Virgins, 60c each. Plans, "How to Introduce Queens" and "Increase," 25c.

E. E. MOTT, GLENWOOD, MICH.



BARNES' HAND & FOOT POWER MACHINERY

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial

Send for illustrated catalog and prices.

W. F. & JOHN BARNES CO.
545 Ruby Street
ROCKFORD, ILLINOIS.

BANKING BY MAIL AT 4%

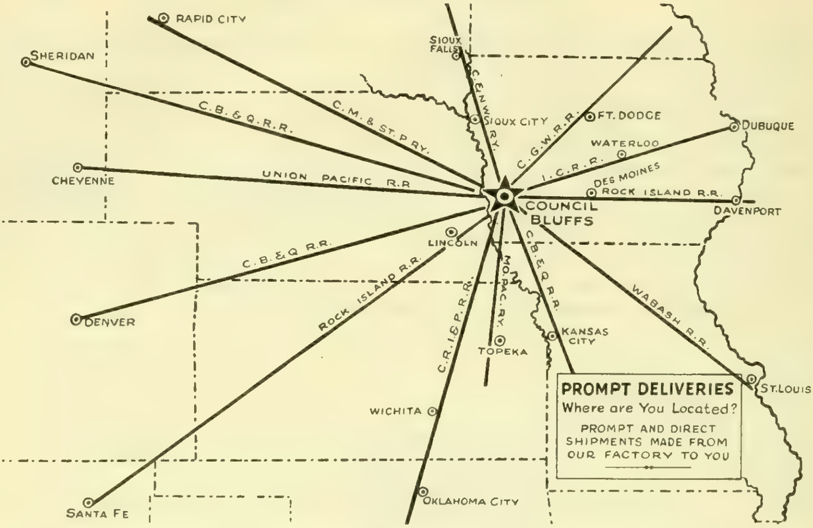
A.T.Spitzer PRES.
E.R.Root VICE PRES.
E.B.Spitzer CASHIER

A SERVICE BANK.

The SAVINGS DEPOSIT BANK COMPANY has always been essentially a SERVICE BANK depending for its growth upon what it does for its patrons—and its 30 years of success have proved the soundness of its policy Deposits cordially welcomed by mail.

The SAVINGS DEPOSIT BANK CO.
THE HOME OF THE HONEY-BEE MEDINA, OHIO

WANT PROMPT SHIPMENTS?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PROMPT DELIVERIES
Where are You Located?
PROMPT AND DIRECT SHIPMENTS MADE FROM OUR FACTORY TO YOU

Time is the essential factor in your success in the days just ahead.

Our dealers are getting replenishment orders over this network of roads, in quantity lots. There is a Root dealer near you. Look him up.

Today these dealers and the Council Bluffs organization are ready to serve you, completely and quickly.

AT YOUR SERVICE

FOSTER HONEY & MERC. CO.,
Boulder, Colo.

THE BORTON APIARIES,
Scotland, S. D.

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LODGE GRASS APIARIES,
Lodge Grass, Mont.

THE A. I. ROOT COMPANY OF IOWA
COUNCIL BLUFFS, IOWA

Superior

Italian

Queens

We have had more orders than we could fill each year, yet we are striving just as hard to produce better queens each year as we would if we had more queens than orders, and we believe that each year we are able to produce queens of a little higher quality. We are not in the business for the time being, or to get every dollar out of it we can, but because we like to rear queens and we want to give you value received for your money. After we have reared the best possible queens for you, we want to put them to you, not just alive, so we can get your money, but in the best possible condition.

OUR GUARANTEE: This simply means that, if any queen we sell is not satisfactory in every respect, we will replace her. Our breeding stock and methods of production are such that we can give this guarantee.

Untested..........One, $1.00; ten or more, $0.75 each.
Tested...........One, 1.75; ten or more, 1.50 each.

We have 2,000 Tested Queens, reared late last fall, that we will supply at our convenience at $1.00 each, or ten or more at $0.80 each.

Send for big bargain list of **BEE SUPPLIES**. New sixty-pound cans, two to the case, in lots of fifty cases, at 91c.

The Stover Apiaries, Mayhew, Miss.

Remember

HOLLOPETER'S QUEENS are bred up to a **STANDARD** and not down to a **PRICE.** Yet the price is low when quality and service are thought of. Twenty-four years of beekeeping experience, eleven years a commercial queen-breeder.

SELECT ITALIAN QUEENS.

Untested, each, $1.25; 6, $7.00; 12, $13.00; 25, $25.00. Write for mailing date and price on larger quantity for increase and requeening.

WE GUARANTEE

safe arrival in U. S. and Canada, pure mating, no disease, and satisfaction.

J. B. HOLLOPETER

ROCKTON - - - PENNA.

High Quality
Three-Banded

Italian Queens

By Return Mail

Untested Queens—1, $1.00; 6, $5.50; 12, $10.00; 25, $20.00. Select Untested—1, $1.15; 6, $6.20; 12, $11.40; 25, $22.25. Select Tested—$1.75 each.

PACKAGE BEES

1-lb. package, $1.75; 2-lb. package, $2.85; 3-lb. package, $3.80. Add price of queen wanted with package. Safe delivery and fullest satisfaction guaranteed. Health certificate with each shipment.

FRANK BORNHOFFER

MT. WASHINGTON - - - OHIO.

Collier's

Bees and Queens

Breeding Queens Imported
from Italy.

THREE-BANDED ITALIANS ONLY.

Shipped by return mail.

Let me have your order for the 1922 season. My queens are bred by men who know how. Every order given my personal attention. All queens reared in strong two-story, ten-frame hives, under natural conditions.

Improve your weak, run-down colonies by using young, vigorous three-banded Italian Queens from my imported stock.

You take no risk buying from Collier. If you are not satisfied I will replace or refund your money. Safe delivery guaranteed.

Prices: Untested, 1, 75c; 6, $4.25; 12, $8.00; 100 for $60.00. Select Untested: 1, $1.00; 6, $5.50; 12, $9.50; 100, $75.00. Tested Queens, $1.50 each. Select Tested, $2.00. Pound package with select untested queen: 1-lb. package, $3.00; 2-lb. package, $4.00 each. Safe delivery guaranteed in U. S. and Canada.

D. E. COLLIER

RAMER - - - ALABAMA

THREE-BANDED

QUEENS

If You Have Tried the Rest,
Now Try the BEST.

Our bees are so busy making honey and rearing queens that we haven't time to tell you about all the good qualities of our queens. But for gentleness, hardiness and honey-gathering qualities you will find them unexcelled. A trial order is most convincing. Remember that every queen we sell is fully guaranteed.

PRICES.

Untested..$1.00; 12, $11.40; 25, $22.50
Sel. Unt... 1.25; 12, 13.50; 25, 25.00
Sel. Tested 2.25; 12, 24.00; 25, 45.00

Circular free.

HERMAN McCONNELL
ROBINSON, ILLINOIS

QUEENS

ITALIANS - CARNIOLANS - GOLDENS

We ship thousands of queens and thousands of pounds of bees all over the United States and Canada every year.

2-comb regular Nuclei, no extra bees	$3.75
3-comb regular Nuclei, no extra bees	5.25
2-comb regular Nuclei with 1 pound extra bees	5.25
1-comb regular Nuclei with 2 pounds extra bees	5.25
1-lb. pkg. bees, $2.25 ea.; 25 or more	2.15
2-lb. pg. bees, $3.75 ea.; 25 or more	3.60
3-lb. pkg. bees, 5.25 ea.; 25 or more	5.00

QUEEN FREE with all of the above packages except 1-pound size; will furnish them at half price with these.

PRICES OF QUEENS ONLY.

1 Untested Queen, $1.05 each; 25 or more, 91c each; per 100	$85.00
1 Select Untested, $1.19 each; 25 or more, $1.05 each; per 100	95.00
1 Tested Queen, $1.57; 25 or more, each	1.40
1 Select Tested Queen, $1.85 each; 25 or more, each	1.57
Breeders, each ....$5.00, $10.00 and	15.00

Send for **FREE** circular.

NUECES COUNTY APIARIES. Calallen, Texas
E. B. AULT, Prop.

Queens Queens

Knight's Three-Banded

Give them a trial and be added to my book of satisfied customers.

Prices for Balance of Season.

1 Select Untested	$1.00
5 Select Untested	4.75
10 Select Untested	8.50
Tested Queens, each	2.00

For large quantities write for prices. Have the bees, men and equipment to handle rush orders by return mail. Pure mating and satisfaction guaranteed. It is left with customer to say what is satisfaction. No disease.

JASPER KNIGHT
HAYNEVILLE - - ALABAMA

July 1, 1922.
Syracuse, N. Y.

Dear Mr. Beekeeper:

We have had a most extraordinary month, and we have done our best to fill your orders. We have now a new stock of goods on hand and at the present time can give you our best service.

July is always a busy time for beekeepers. They want their goods promptly. We are here to serve you. Send in your order today.

Yours for a season that will be the "best ever."

F. A. SALISBURY,
1631 W. Genesee Street,
Syracuse, New York.

Bumper Crops

Not the Price-

QUALITY COUNTS

BREEDING WILL TELL!

Queens from Extra Selected Breeders. Proven by use. HIGHLY PROLIFIC. Hardy and Disease-RESISTING.

Untested, $1.50, 12 or more, $1.25; 100 or more, 90c.

Tested, $2.50; 12 or more, $2.00.

Prompt replacements, Fair Dealing. We rigidly adhere to the above.

---The---
Southland Apiaries
Box 585, Hattiesburg, Miss.

Guaranteed Satisfaction

Northwestern Headquarters for Italian Queens

The queen is the life of the colony. You cannot afford to keep poor queens or a poor strain of bees. I have been in the bee business for more than twenty years and have made every effort to improve the honey-gathering qualities of my bees by purchase of breeders and by selective breeding. I believe that my bees are unsurpassed by any. When you buy Untested Queens from me you are getting select untested queens. I will begin mailing queens about June 1.

Prices June 1 to October 1:	**1**	**6**	**12**	**50**	**100**
Untested Italian Queen......	**$1.25**	**$7.00**	**$12.50**	**$50.00**	**$95.00**
Tested Italian Queen.......	**2.00**	**11.00**			

I have no pound packages or nuclei for sale.

J. D. HARRAH, Route 1, FREEWATER, OREGON

Queens *Bees*

Forehand's 3-Bands

One Queen for $1.00

They Satisfy. Why?

Because they are guaranteed to be as good as money can buy. Not a cheap queen but a queen of the best at a cheap price. Every queen guaranteed to reach destination in first-class condition, to be purely mated and give perfect satisfaction or money back. Orders filled by return mail.

Untested: 1 to 25, $1.00 each; 25 to 50, 90c; 50 to 100, 80c each. Select Untested, 1 to 25, $1.25 each. Tested, $2.00 each, or 12 for $20.00. One lb. pure Italian bees with queen, $3.00. Two lbs. pure Italian bees with queen, $5.50 Ten of more 2-lb. packages, $5.00 each.

N. FOREHAND, RAMER, ALABAMA.

Requeen Now If You Can!

Right now is the time to begin your plans for securing the maximum crop of honey next season.

Requeening with young, prolific queens of a known, honey-gathering strain is one of the most important factors in being a successful honey producer. Young, prolific queens introduced now will mean two things: First, strong colonies to go into winter quarters. Second, strong colonies to gather next season's crop of honey.

For more than 50 years we have been breeding up to the Root Quality Queens and Bees. We do not believe that better bees or queens are reared anywhere in the world today. What we try to do, is to rear THE BEST.

We breed queens with special view to the honey-gathering quality of their bees. We have had this one chief purpose in breeding constantly in mind all these years. We have it uppermost in our minds today.

THE DIFFERENT GRADES OF QUEENS.

Italian queens are distinguished from blacks by three yellow bands on the upper part of the abdomen. Leather-colored Italians show three stripes of dark-yellow leather color.

An untested queen is one which is sold after she is found to be laying, not having been previously tested.

A tested leather-colored queen is one which has been examined by the breeder and her bees found to be uniformly marked with at least three dark-yellow bands.

Select queens of any of the grades are those which show better color, size, shape, etc. Frequently select untested queens develop into fine breeding queens.

PRICE OF QUEENS—Up to October 1.

	1 to 9.	10 to 24.	25 to 49	50 to 99.	100 or more.
C312000—Untested	$1.50 each.	$1.40 each.	$1.35 each.	$1.25 each.	$1.15 each.
C313000—Select Untested...	2.00 each.	1.90 each.	1.80 each.	1.70 each.	1.60 each.
C314000—Tested	2.50 each.	2.35 each.	2.25 each.	2.10 each.	2.00 each.
C315000—Select Tested	3.00 each.	2.85 each.	2.70 each.	2.25 each.	2.40 each.

Note the large saving to be made by taking advantage of our low prices on quantity lots.

OUR GUARANTEE ON QUEENS.—We guarantee safe arrival of queens sent in mailing cages. We agree to refund the money or replace the queen if the one first sent arrives dead; provided the beekeeper receiving the dead or unfit queen returns her at once and in her own shipping cage, properly marked with name and address of sender. No delay in returning the queen can be permitted. This guarantee applies only on queens sent to customers in the United States and Canada.

PRICES OF BEES IN COMBLESS PACKAGES BY EXPRESS.
Up to August 15.

C310700—1-pound package	$3.00;	25 or more packages, $2.85 each.
C310800—2-pound package	5.00;	25 or more packages, 4.75 each.
C310801—3-pound package	7.00;	25 or more packages, 6.60 each.

Add price of queen wanted to package price given above.

OUR GUARANTEE ON BEES SHIPPED BY EXPRESS.—We agree to make good any loss to bees in transit, provided consignee secures such notation as will cover any apparent damage done while in transit, on express delivery receipt, signed in full by express agent, **receipt to be mailed to us at once** with letter giving full particulars, on receipt of which replacement will be made immediately. **The guarantee does not apply on bees shipped to foreign countries.**

Mail all queen and bee orders direct to Medina or to our nearest branch office.

THE A. I. ROOT COMPANY

WEST SIDE STATION **MEDINA, OHIO, U. S. A.**

NEW PRICES

On Friction Top Cans and Pails

We quote as follows:

	25	50	100	200	500	1000
2½-lb. cans	$1.15	$2.15	$4.10	$7.75	$18.75	$36.00
5 -lb. pails	1.90	3.50	6.50	12.00	28.25	55.50
10 -lb. pails	2.75	5.00	9.50	18.00	43.00	83.00

All packed in fibre containers. They keep neat and clean till you use them. Prices F. O. B. cars Lansing and not from some distant shipping point.

Send in Your Order

FIVE-GALLONS CANS—1¾-inch screw top, packed two in a case. Prices as follows:

Each, $1.40; 10 Cases, $13.00; 25 Cases, $30.00; 50 Cases, $57.50; 100 Cases, $110.00.

F. O. B. cars Lansing, **not from some distant shipping point.**

Send in Your Order

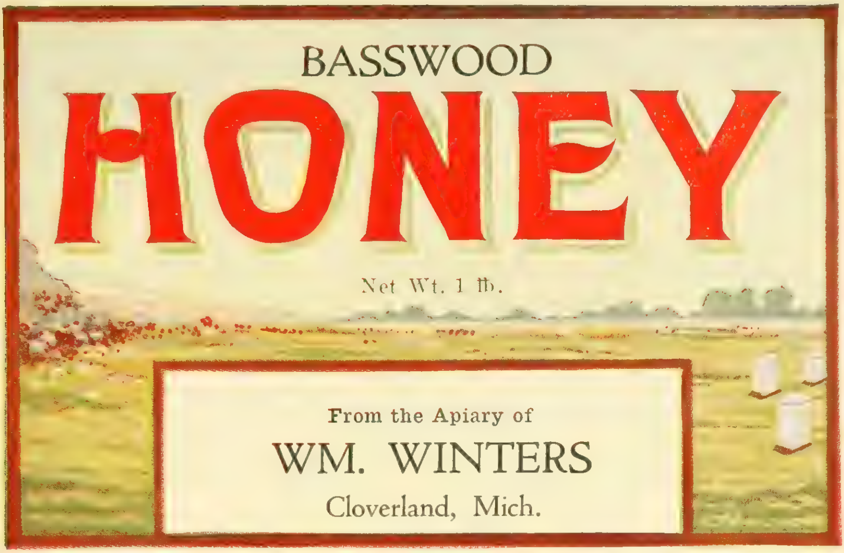
A GRADE TIN PASTE—Just what you want for attaching labels to tin and glass containers. It sticks. Prices as follows:

1 Pint, 25c; 1 Quart, 45c; 1 Gallon, $1.50.

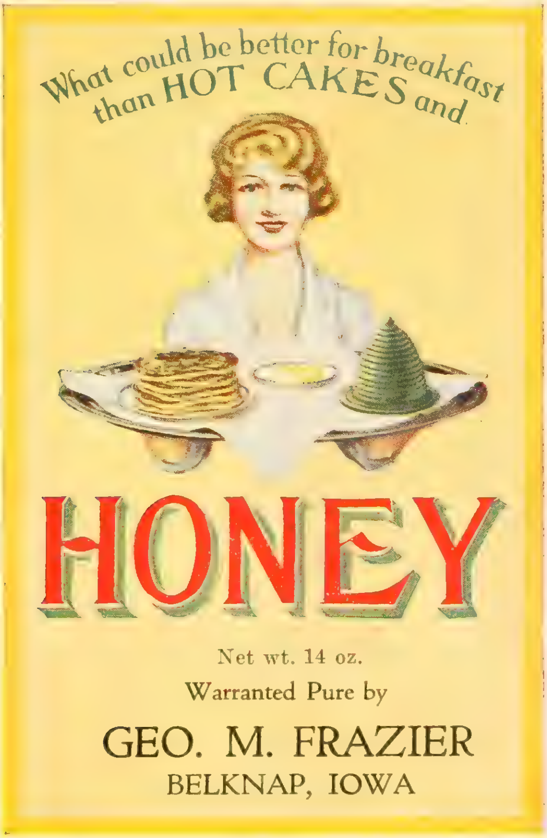
Postage extra. Remember, IT STICKS.

M. H. HUNT & SON

510 North Cedar Street LANSING, MICHIGAN


BASSWOOD
HONEY
Net Wt. 1 lb.
From the Apiary of
WM. WINTERS
Cloverland, Mich.

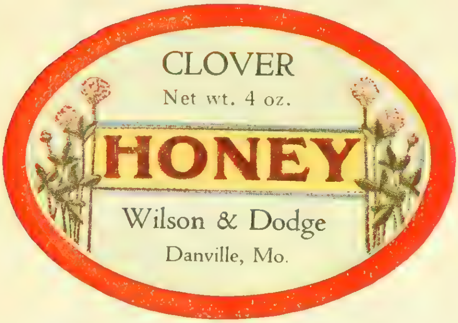
No. 110.—250 for $2.05; 500 for $2.80; 1000 for $4.00; each additional 1000, $2.40.


What could be better for breakfast than HOT CAKES and
HONEY
Net wt. 14 oz.
Warranted Pure by
GEO. M. FRAZIER
BELKNAP, IOWA

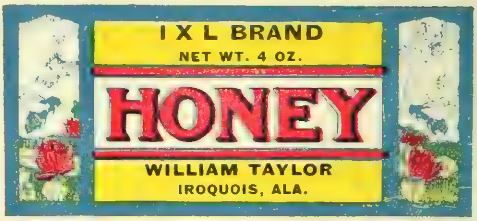
No. 116.—250 for $2.05; 500, $2.80; 1000, $4.00; each additional 1000, $2.40.

The printing in black may be changed to suit you.

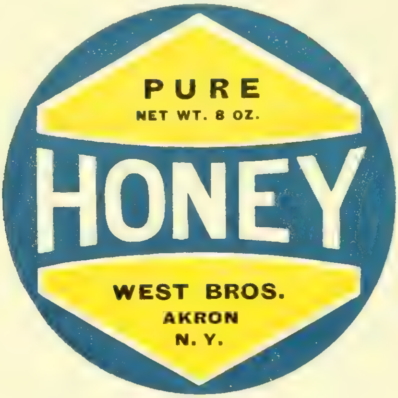
The printing in black may be changed to suit you.


CLOVER
Net wt. 4 oz.
HONEY
Wilson & Dodge
Danville, Mo.

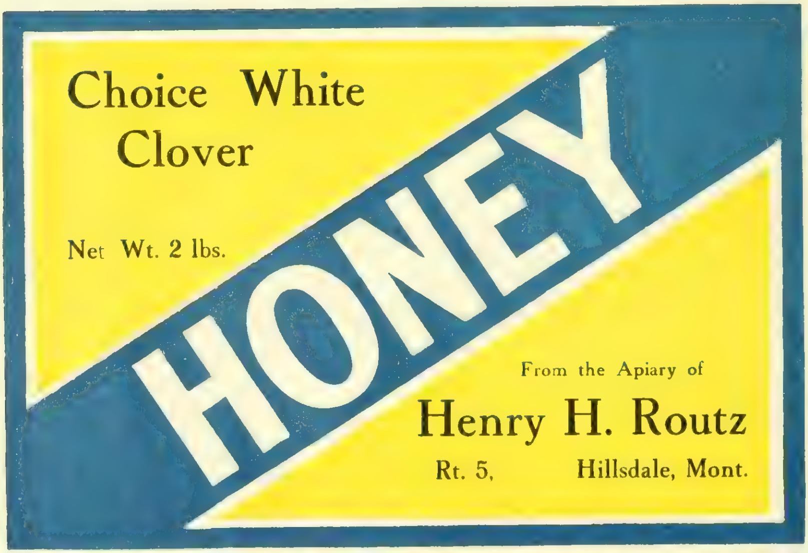
No. 106.—250 for $3.00; 500 for $3.75; 1000 for $5.00; each additional 1000, $3.50.


I X L BRAND
NET WT. 4 OZ.
HONEY
WILLIAM TAYLOR
IROQUOIS, ALA.

No. 119.—250 for $2.00; 500 for $2.50; 1000 for $3.50; each additional 1000, $2.00.


PURE
NET WT. 8 OZ.
HONEY
WEST BROS.
AKRON
N. Y.

No. 121.—250 for $2.80; 500 for $3.40; 1000 for $4.40; each additional 1000, $2.80.


Choice White Clover
Net Wt. 2 lbs.
HONEY
From the Apiary of
Henry H. Routz
Rt. 5,
Hillsdale, Mont.

No. 105.—250 for $2.00; 500 for $2.70; 1000 for $3.80; each additional 1000, $2.20.

Achord's Italians Are Good Bees

Whether you have only a few colonies or five hundred, we believe you will like them and they will prove a worthy addition to your yard. They are a bright, hustling, three-banded strain, bred primarily for honey production, but also gentleness and color. We have spared neither labor nor expense to make them the very best.

Price of Queens, June 15th to October 1.

Untested ....$1.00 each; 5 or more, $0.90; 10 or more, $0.80; 25 or more, $0.75
Select Untested ....$1.10 each; 5 or more, 1.00; 10 or more, .90; 25 or more, .80
Tested .... 1.75 each; 5 or more, 1.65

Safe arrival and satisfaction guaranteed.

W. D. ACHORD, FITZPATRICK, ALABAMA.

What Extractor to Buy

Root Two-frame Reversible Extractor, more of which have probably been sold than of all other makes combined.

What should you know very positively about an extractor before buying one?

You should know first of all that it is strong, rugged, built on right mechanical principles and so will not fail you in the busy rush of the extracting season.

You should know that back of the extractor that you buy stands the guarantee of a manufacturer who knows the problems of extracting and has thoroughly worked them out by years of test and experience.

You should know that the manufacturer of whom you buy will be able to give you lasting service, that is to say, furnish you parts for the extractor you buy today even ten or twenty-five years from today, and do it by the earliest express or mail.

You should know that the extractor you buy has the fewest complications possible, and is the easiest to operate.

You should know that the extractor you choose has stood the test of years and is not an experiment that may soon go to the extractor cemetery where so many "new" extractor hopes have gone.

Our Proposition to You.

We invite the beekeeper to put any one of our extractors to the severest test for strength of construction. Put ours alongside of any other extractor of like capacity, speed both up to the highest number of revolutions possible, and judge for yourself as to strength and ruggedness.

Our record for quality and correct construction is this: Many of the extractors we made and sold 25 or 30 years ago are still in operation and doing excellent work. We are making even sturdier, longer-lasting extractors today—for we know how.

Our warrant for prompt service today and ten years from today is this: We are furnishing extractor parts for models made 25 years ago and furnishing such parts by the first outgoing express or mail. What we have done in the past, we shall do in the future. If you buy an extractor of us today, and five or ten or twenty-five years from today want a part for it, our factory will furnish it by earliest return mail or express, just as we have done for years. You can't get that service except from the long-established manufacturers.

Every Extracting Need Met.

Our [illegible] years of experience in designing and manufacturing extractors has taught us the extracting needs of the different classes of beekeepers, and today we manufacture nine regular models. The line runs from the "Novice" two-frame hand extractor (the excellent little extractor designed by A. I. Root 53 years ago) up to the latest big extractor, our 8-frame Buckeye Power Extractor. It is a complete line. In it is your extractor, and we shall be glad to advise you what extractor you need if you will tell us how much extracting you have to do, where you have to do it, whether you have power or not, how long time you have in which to do it, and so forth.

Complete Extracting Outfit.

Besides our complete line of extractors we have the best and latest in uncapping knives, honey storage tanks, capping-melters, wax-extractors, wax-presses, honey-strainers, oil and gasoline stoves—everything for extracting. Ten pages of our 1922 catalog are devoted to extracting equipment. It is free to you for the asking.

Write for quotations on your complete extracting equipment.

Four-frame Buckeye Hand or Power Extractor.

The A. I. Root Co., West Side Sta., Medina, Ohio

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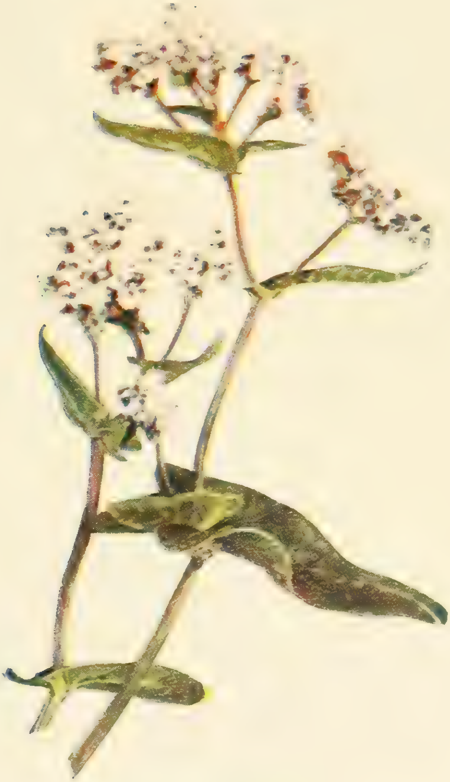
College

Gleanings in Bee Culture



Our Old Friend, Buckwheat.

VOLUME L AUGUST, 1922 NUMBER 8

$1 Order Your Queens Now $1

QUEENS OF SUPREME QUALITY.

Just think of it. Only $1 for one of my bright three-banded northern-bred Italian queens, after 19 years of select breeding. I have produced a strain of bees that get the honey and stand the northern winters. Last year every order was filled by return mail. Expect to do the same this year. This is the kind of letters I receive daily:

> "Dear Mr. Major: How early in spring could you fill an order for one dozen Italian queens? My experience and observation with your strain of Italians have shown them to be extremely gentle, superior as workers, and unexcelled in the beautifully white and even capping of the honey. Yours very truly.
> "Orel L. Hershiser."

Mr. Hershiser is one of our state inspectors and has been a beekeeper almost all his life; also inventor of the Hershiser wax-press. Does he know good bees when he sees them? Does a duck swim? I guarantee pure mating, safe arrival, free from disease and health certificate furnished with each shipment.

Select Untested, from 1 to 100, $1.00 each.
Extra-Select Breeders, $5.00 each.

All candy in queen-mailing cages mixed to government regulations; all orders greatly appreciated and acknowledged the same day received.

H. N. MAJOR, SOUTH WALES, N. Y.

"Griggs Saves You Freight."

Toledo, Ohio

BEES SUPPLIES ARE ADVANCING

with lumber. Why not lay in your stock now at old prices? Send for our special

BIG DISCOUNT SHEET.

This will save you money.

Honey Shipping Cases and Pails ready for quick shipment. Extractors, Uncapping Cans and Storage Tanks, all sizes at lowest cash prices.

We carry both Lewis and Root Goods. Specify which you wish. Free Catalog of either make sent upon request.

HONEY WANTED
in exchange for supplies.
NEW CROP ONLY.

Griggs Bros. Co.
TOLEDO, OHIO.

"Griggs Saves You Freight."

1922 SUMMER PRICES 1922
--ON--
Quality Bees and Queens

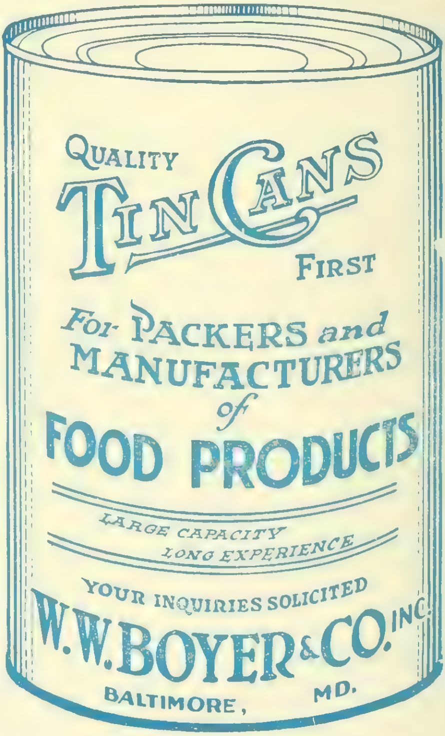
There is bound to be a rush re-queening during July, August and September. For this occasion we offer the following prices.

1	Untested Queen	$1.00
	25 or over	.90
1	Select Untested Queen	1.25
	25 or over	1.10
1	Tested Queen	1.75
	25 or over	1.25
1	Select Tested Queen	2.00
	25 or over	1.50

No package bees or nuclei shipped the remainder of this season.

Safe arrival and satisfaction guaranteed.

THE A. I. ROOT COMPANY OF TEXAS
BOX 765. SAN ANTONIO, TEXAS.



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Entered as second class mail matter at the Postoffice at Medina, Ohio. Published monthly.
Space occupied by reading matter in this issue, 62.5 per cent; advertising, 37.5 per cent.

THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

Editorial Staff

Geo. S. Demuth and E. R. Root	A. I. Root	H. H. Root	H. G. Rowe
Editors	Editor Home Dept.	Assistant Editor	M'n'g Editor

HONEY WANTED HONEY

WE ARE in the market for both comb and extracted. Send sample of extracted, state how put up, with lowest price, delivered Cincinnati. Comb honey, state grade and how packed, with lowest price delivered Cincinnati. We are always in the market for white honey, if price is right.

C. H. W. WEBER & CO.

2163-65-67 Central Ave., Cincinnati, Ohio.

MR. BEEKEEPER ----

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *We pay the highest cash and trade prices for beeswax.*

Write for free illustrated catalog today.

LEAHY MFG. CO., 95 Sixth Street, Higginsville, Missouri

Texas Beekeepers should write to A. M. Hunt, Goldthwaite, Texas.

SUPERIOR FOUNDATION

"BEST BY TEST"

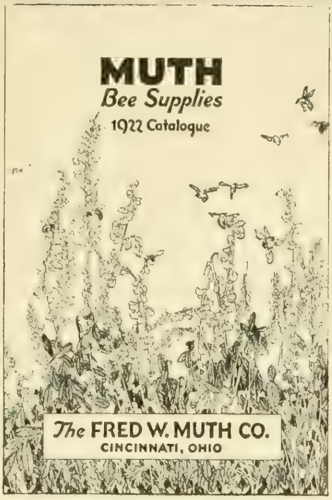
Do not fail to secure our 1922 reduced prices on SUPERIOR FOUNDATION. State quantity desired.

We also manufacture Hoffman frames, dovetailed beehives, etc.
Quality unexcelled; prices on request.

SUPERIOR HONEY COMPANY, OGDEN, UTAH

(Manufacturers of Weed Process Foundation.)

A MESSAGE FOR YOU



You need our new 1922 bee supply catalog more than ever before. Have you received one? Many new articles are listed for the saving of labor and greater honey production. Our attractive prices, superior quality and prompt service will always be appreciated by beekeepers.

Send a list of your requirements to us.

THE FRED W. MUTH COMPANY,
Pearl and Walnut Streets,
Cincinnati, Ohio.

Established 1885.
Write us for catalog.

BEEKEEPERS' SUPPLIES

ALWAYS ON TOP

The Kind You Want and the Kind That Bees Need.

We have a good assortment in stock of bee supplies that are mostly needed in every apiary. The A. I. Root Co.'s brand. Let us hear from you. Information given to all inquiries. Beeswax wanted for supplies or cash.

John Nebel & Son Supply Co.
High Hill, Montgomery Co., Mo.

LEWIS 4-WAY BEE ESCAPES

LEWIS
REGISTERED
4-WAY
BEE
ESCAPE
PATENT APPL'D. FOR

Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal. Price each 18c prepaid. Made by

G. B. LEWIS COMPANY, Watertown, Wis., U. S. A.
For Sale by all Dealers.

Honey Containers

We have some interesting prices to offer on honey containers; send us a list of your requirements and let us quote you our prices.

2½-lb. cans in reshipping cases of 24 and crates of 100 and 500.
5-lb. pails in reshipping cases of 12 and crates of 100 and 200.
10-lb. pails in reshipping case of 6 and crates of 100.
1-gallon square or oblong cans with 1¾-inch screw cap in boxes of 6.
1-gallon square or oblong cans with 1¾-inch screw cap in crates of 100.
60-lb. square cans with 1¾-inch screw cap in cases of 2 cans.
16-oz. round glass jars in reshipping cases of 2 dozen.
6½-oz. tin top tumblers in reshipping cases of 4 dozen.
Shipping cases for comb honey for any style sections in the 24-lb. or 12-lb. size.
Send for our catalog showing full line of Bee Supplies.

AUGUST LOTZ CO.
BOYD, WISCONSIN.

HONEY MARKETS

U. S. GOVERNMENT MARKET REPORTS.

Information from Producing Areas (First Half of July).

CALIFORNIA POINTS.—The nectar flow from orange has now finished, and the flow from sage is nearly over. Orange yield is reported light to fair, sage flow generally good. Fair eucalyptus flow is being secured in Alameda County. Bees in southern California said to be now gathering mostly alfalfa nectar. Beekeepers are busy extracting. Old-crop honey practically exhausted. Demand light and market dull. Few sales reported, carloads f. o. b. usual terms, as follows: White orange 9-9¾c, few reported quoting 8½c, white sage 8½-8¾c, light amber sage 6½-7c, light amber alfalfa 5¾-6c. Beeswax, cash to beekeepers, 22-24c per lb.

INTERMOUNTAIN REGION.—Prospects differ widely in different areas. In Montana an unusually large crop is said to be in prospect. Southern Utah will have a good crop, but in the northern part of the state cold winds have proved harmful to the flow. Heavy flow secured in eastern Washington from first crop alfalfa. Sweet clover in Colorado is suffering from drought where irrigation is not abundant and from grasshoppers; and in Idaho alfalfa weevils are said to be numerous. Little surplus yet secured in Salt River Valley. Some beekeepers will commence extracting new crop early in July; others will wait until August. Shipments have been light recently, as supply of old honey is pretty well disposed of. Comb honey, especially in Montana, said to be still rather abundant. Small lot sales reported of white sweet clover and alfalfa, largely in small tins, at 9½-10½c. Some 60-lb. cans sold by beekeepers to near-by dealers at 8½ per lb. Sales of fancy and No. 1 white comb reported at $4.50, and of No. 2 white alfalfa at $3.00. For average yellow beeswax, some beekeepers are receiving 21c cash or 24c in trade; other prices range slightly higher.

TEXAS POINTS.—The crop thus far has been generally poor, due to too much rain. If recent spell of dry weather continues, prospects will improve. Many colonies have gathered little more than enough to live on, and some colonies reported starving, with no honey on which to rear brood. Above conditions refer to north Texas. South Texas reports conditions more nearly normal. The price for 60-lb. cans extracted is reported as 8½c per lb. for white and 7½c for light amber. In 10-lb. pails, 12-13c per lb. is secured for case lots. Bulk comb honey, 6/10s. is listed at $9.00 per case for light-colored, mild honey. Beekeepers receiving 25c per lb. for beeswax.

EAST CENTRAL AND NORTH CENTRAL STATES.—Cold nights, cloudy and rainy weather in June hindered bees from gathering nectar in Wisconsin, Michigan and parts of Ohio, but even so a fairly good crop has been secured. In some sections a heavy yield was obtained, one beekeeper reporting 120-lb. surplus about ready to take off. Basswood is expected to bloom heavily. Inquiry coming in already for new honey. Practically nothing is being held over from last season, in strong contrast with the situation a year ago. 60-lb. cans white extracted selling at 12c per lb in case lots. Small lots No. 1 white clover sold at $4.00-4.50, some $4.80 per 24-section case.

PLAINS AREA.—Abundant rains early in July, after the drought during May and June, helped raise prospects in Iowa towards normal. Kansas also reports an unusually good crop. Honey is said to be of fine quality. American foul brood is making inroads in some apiaries. Some beekeepers will start extracting late in July. Sales extracted white clover in 60-lb. cans reported to bottlers at 10c per lb.

NORTHEASTERN STATES.—Honey flow intermittent as a result of too much cloudy and rainy weather in many sections. It is thought by some that the rain has been instrumental in causing the very heavy swarming in some apiaries; this swarming is about over. The rain has cut the intended buckwheat acreage and the crop will be late. Basswood came on early, and is blooming prolifically, but is not yielding as well as during some years. Honey running unusually light in color this season. European foul brood reported as prevalent in some sections. Numerous inquiries are being received by some beekeepers for later shipment. Few sales white extracted in 60-lb. cans, 12c per lb.

WEST INDIES.—Report from Porto Rico indicates that honey is just beginning to come in in the hill districts; and the yield has been poor thus far all over the island. Beekeepers receiving 4c per lb., by the barrel. Shipments from Cuba have fallen off somewhat. One large lot reported going to Antwerp at 57c per gal., including cost and freight.

SOUTHEASTERN STATES.—The summer flow is now on in Georgia from cotton and Mexican clover and some surplus is being stored. Honey plants in good condition. Surplus flow nearly over. Some beekeepers report that the remainder of the yield will be used entirely for increase and for winter stores. A fair demand reported for both the better grades of honey and for queens. Light flow reported from button bush in Louisiana. In Mississippi heavy rains and extremely hot weather have damaged honey plants. White honey, in barrels and tins, reported selling at 10c per lb., light amber at 8-9c, and amber at 6-8c. Best yellow beeswax reported selling in Alabama at 21-23c per lb., and in Mississippi and Georgia at 25c.

Telegraphic Reports from Important Markets.

BOSTON.—Since last report 1 car Porto Rico by boat arrived. Demand for extracted honey limited and practically none for comb. Comb honey cleaned up except a little candied stock. Prices show little change. Extracted: Sales to confectioners and bottlers: Cuban and Porto Rican, amber 80-85c per gal., white sage 15-16c per lb. for California stock.

CHICAGO.—Since last report 700 lbs., Ill., 200 lbs. Ia. and 4,400 lbs. Colo. arrived. Supplies remain comparatively light. Demand very slow, movement very light. Market dull and about steady on comb, weaker on extracted, apparently largely a reflection of the weak tone of f. o. b. market. Comb: Sales to retailers: 24-section cases Iowa and Wisconsin, mixed clovers No. 2, $3.00. Colorado and Arizona, alfalfa and mixed clovers No. 1, $4.00-4.25, few $4.50. Extracted: Sales to bottlers and bakers, Nevada, white sweet clover and sage, mixed 10-10½c. Arizona, light amber alfalfa and mountain flowers 8½c. Beeswax: Supplies light. Demand moderate, market steady. Sales to laundry supply houses and wholesale druggists, Colorado, Arizona and Montana, light 31-32c, dark 28-30c. Brazilian, light 28-30c. Central and South American, dark 22-26c.

NEW YORK.—Domestic receipts very light, foreign receipts limited. Demand limited, movement light, market dull, few sales. Extracted: Spot sales to jobbers, wholesalers, confectioners, bakers and bottlers, domestic, per lb., California, light amber alfalfa 8-8½c, light amber sage 9-9½c, white sage 11-11½c, few 12c, white orange 12-12½c. Intermountain Region, white sweet clover 10-11c, New York, no sales. South American and West Indian refined per gal., 65-70c, mostly 65c. Beeswax: Foreign receipts limited. Demand moderate, movement limited, market steady. Spot sales to wholesalers, manufacturers and drug trade, South American and Chilean, light 29-30c, Brazilian, 28-29c, few 30c. African, dark 23-25c, few 26c. Cuban, light 28-29c, darker 22-25c.

PHILADELPHIA.—Extracted: Supplies very light. Demand is not active but market is stronger. Few sales to jobbers, San Domingo, light amber various flavors 70c. Porto Rico, light amber various flavors 73c per gal. Beeswax: Supplies are light but sufficient for demand, which is slow. Market steady. Sales to manufacturers, per lb., Chilean, yellow, 32c, African, yellow 30c.

ST. LOUIS.—Since last report few lots southern extracted light amber arrived by express amounting to about 5,000 lbs. Since last report demand shows no improvement, continuing light. Practically no movement, market very dull. Comb: Sales to wholesalers and jobbers in 24-section cases, Idaho and California, white clover and alfalfa No. 1 medium $5.00-6.00. Extracted: Sales to wholesalers and jobbers, per lb. in 5-gal. cans, California light amber alfalfa 7¾-9c. Beeswax: No receipts reported since last report. No change in market. Ungraded average country run quoted nominally to jobbers at 26c per lb.

H. C. TAYLOR,
Chief of Bureau of Markets.

Special Foreign Quotations.

Liverpool.—Honey market dull, very little inquiry. The price is from 9 to 9½c per pound in American currency. The price of beeswax is 28 to 29 cents per lb.

London, Eng., July 5. Taylor & Co.

The A. I. Root Company's Quotation.

The following are prices we have paid since our last quotation, F. O. B. shipping point, for honey in car lots: White orange, 9½c; water white sage, 9c; water white catsclaw, 8½c; white mesquite, 6c; water white alfalfa, probably mixed with sweet clover, 7½c. We are in the market for one or two cars of white clover honey for which we can pay F. O. B. shipping point 10½c.

The A. I. Root Company.

The Opinions of Honey Producers Themselves as Reported to Gleanings in Bee Culture.

Early in July we sent to actual honey producers and some associations the following questions:

1. What is the average yield per colony to date this season in your locality? (a) Extracted honey? (b) Comb honey?
2. How does this compare with the average yield for your location? Give answer in per cent.
3. What portion of the entire crop of surplus honey does this represent in your estimation? Give answer in per cent.
4. What price are producers being offered for the new crop of honey at their station for honey in large lots? (a) Extracted honey, per pound? (b) Comb honey, per case?
5. What are prices to retailers in small lots? (a) Extracted in 5-pound pails or other retail packages? (b) Comb honey, fancy or No. 1, per case?
6. What per cent of the honey produced in your locality is sold locally?
7. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair or rapid.

The answers as returned by our honey and bee reporters are as follows:

		Yield per col.		% Av.	% Ent.	In large lots.		To Retailers.		Pct. Sold	Move-
State.	Reported by	Ex.	Comb.	Yield.	Crop.	Ext.	Comb.	Ext.	Comb.	Locally.	ment.
Ala.	J. C. Dickman	40	30	80	80	$.06	$5.25	$0.75	$6.50	95	Slow
B. C.	W. J. Sheppard	50		100	75	.28		1.75		75	Slow
Ark.	J. V. Ormond	50	50	150	50			1.00		75	Slow
Ark.	J. Johnson		20	100	30					75	Rapid
Cal.	L. L. Andrews	80	20	140	90	.07		1.00		2	Slow
Cal.	M. C. Richter	15		10				1.50		50	Fair
Colo.	B. W. Hopper	50	25	150	50			.60	4.50	5	Fair
Conn.	A. Latham									75	Slow
Fla.	C. C. Cook	90		175	50	.08		.60		90	Fair
Fla.	H. Hewitt	45		125	80	.08		.75			Slow
Fla.	W. Lamkin	75		125		.08	2.40	.65	3.12	25	
Ga.	J. J. Wilder	60	40	120	100	.10	4.00	.75	5.00	70	Fair
Ill.	A. C. Baxter	80		90	70			1.10		100	Slow
Ill.	C. F. Bender		50	100	95		4.80		5.50	50	Good
Ill.	A. L. Kildow	30	60	115	60			1.10	6.00	10	
Ind.	T. C. Johnson	75	60	125	75			1.10	6.00	100	Slow
Ind.	E. S. Miller	50	25	100	50			.80	4.80	100	Slow
Ind.	J. Smith	25		75	50			1.25		100	Fair
Iowa.	E. G. Brown	100		100	50			.80	5.00	20	Fair
Iowa.	F. Coverdale	40	25	90	80			.75	5.00	15	Fair
Iowa.	W. S. Pangburn	100	60	100	45			.80	5.50	10	Slow
Kan.	J. A. Nininger	40	25	100	50			.75	5.00	100	Fair
Me.	O. B. Griffin	8	8							35	
Md.	S. G. Crocker, Jr	30	20	60	90					100	Slow
Mass.	O. M. Smith									100	Slow
Mich.	I. D. Bartlett	75		150	75			.75		75	Slow
Mich.	E. D. Townsend	65		65	90						
Mich.	F. Markham	80	50	80	100	.11		.85		90	Slow
Mo.	J. H. Fisbeck	60		110	75					100	Slow
Mo.	J. W. Romberger	80	70	100	65	.16	4.75	.90	5.25	100	Slow
Nev.	E. G. Norton	50								2	
Nev.	L. D. A. Prince	25	25	75	50					10	Slow
N. Y.	Adams & Myers	30		50	50			1.00	6.00	75	Fair
N. N.	G. B. Howe			100	90			1.00	7.00	95	Good
N. Y.	F. W. Lesser	60	40	100	60					10	Slow
N. Y.	N. L. Stevens	10		25	20					10	Slow
N. C.	C. S. Bumgarner		50	110	75					100	
N. C.	C. L. Sams	45	35	100	75	.12	4.90	1.00	5.00	80	Fair
Ohio.	E. G. Baldwin	30	30	30	40		6.00			50	Fair
Ohio.	F. Leininger	100	75	100	100		4.80	.75		25	Fair
Ohio.	J. F. Moore	80		90	90			.80	4.25	10	Slow
Okla.	J. Heueisen	50	20	100	60			1.00		100	Fair
Okla.	C. F. Stiles	30		80	80					100	Fair
Ore.	E. J. Ladd	75	50	100						100	Slow
Ore.	H. A. Scullen	50		90	90			1.15	6.00	98	Fair
Pa.	H. Beaver	20		80	50			.65			Slow
Pa.	D. C. Gilham	40	32	110	70			1.50	7.00	75	Slow
Pa.	G. H. Rea	20	15	30	50					75	
R. I.	A. C. Miller			80						100	Slow
S. D.	L. A. Syverud	50	30	115	55					80	Slow
Tenn.	J. M. Buchanan	50	25	75	90			1.00		90	Slow
Tex.	T. A. Bowden	10		5	50					100	Fair
Utah.	M. A. Gill	50	30	150	40	.08	4.00	.50	4.50	75	Fair
Vt.	J. E. Crane		7	100	15						Slow
Va.	T. C. Asher	15	12	25	100	.20	6.00	1.00	6.00	50	
Wash.	W. L. Cox					.10				100	Fair
Wash.	G. W. B. Saxton	25			25			.85			Slow
Wash.	G. W. York									100	
W. Va.	T. K. Massie		25	60	50					100	Fair
Wis.	N. E. France	Fr	Fr	100	60			.75		75	
Wis.	E. Hassinger, Jr.	60	40	95	100			.85	6.60	85	Fair
Wis.	H. F. Wilson	75	50	100						100	Slow

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100 Regular Shipping Cases, 4¼ x 1½, packed 50 per crate....	$25.20
400 Regular Shipping Cases, 4¼ x 1⅞, packed 50 per crate....	26.10
250 Regular Shipping Cases, 4x5x1⅜, packed 50 per crate....	25.20
230 Regular Shipping Cases, 4x5x1⅜, packed 10 per crate....	5.25
90 Regular Shipping Cases, 4¼ x 1⅞, packed 10 per crate....	5.50
210 Regular Shipping Cases, 4¼ x 1½, packed 10 per crate....	5.25

All cases listed are single-tiered with glass K. D.

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A—Pan over machinery. B—Bottom of tank.

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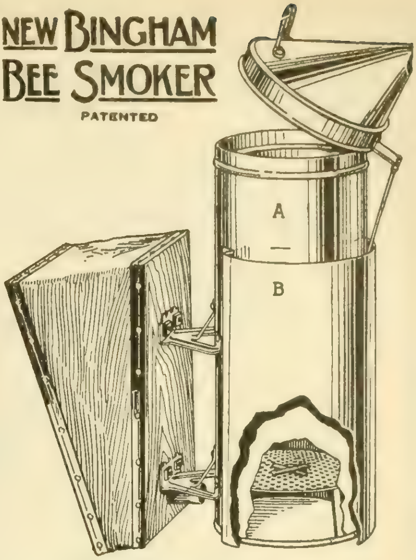


BIG SMOKE—With Shield
Fire Pot, 4 x 10.

The Smoker

You Ought to Own

THE most important invention in beekeeping, as little can be accomplished without the Bee Smoker.

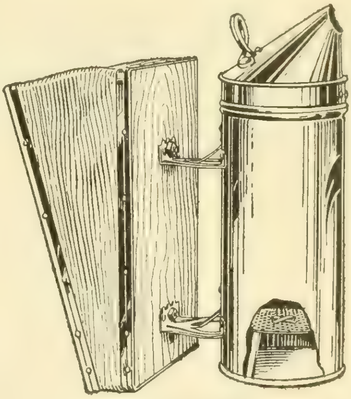
The *new Bingham Bee-Smoker is the most* efficient and durable machine on the market. The standard for over 40 years in this and many foreign countries, and is the all-important tool of the most extensive honey producers of the world.

Comes with metal legs, metal binding and turned edges. The four larger sizes have hinged covers. The fire grate is of very substantial material, with an abundance of draft holes, the 4-inch size having 381 holes, equal to an opening of 2-inch square.

A valve in the bellows of the larger sizes makes the Smoker respond to the most delicate touch.

The new Bingham comes in six sizes, including the Big Smoke, which is furnished both with and without shield. The larger sizes are best, as they hold more fuel, give more smoke, require filling less often, and are especially recommended to those who work with their bees several hours at a time.

Write for our complete catalog of bee supplies and accessories. Special circular of all sizes of Bingham Smokers free for the asking.



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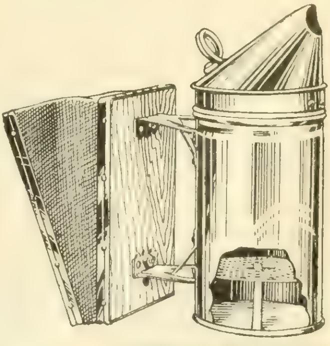

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The Diamond Match Co., who manufacture our supplies, are the largest manufacturers in the world who make bee supplies. They own their own timber lands, mills and factories. We pass on the full advantage of the resulting low production cost to the Beekeeper.

One-Story Complete Dovetailed Hive

With metal telescope cover, inner cover, reversible bottom, Hoffman frames, nails, rabbets.

Standard Size.

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With Hoffman frames, nails, rabbets.

Standard size, crate of 5, K. D., 8-fr.	$5.20
Standard size, crate of 5, K. D., 10-fr.	5.85
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Standard size	100, $5.20;	500, $25.00
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Medium	5 lbs., 68c lb.;	50 lbs., 65c lb.
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For 4 x 5 x 1⅜ sections including section-holders, fence-separators, springs, tins and nails.

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WOODHAVEN, NEW YORK

Necessity

is the mother of Thrift. Realizing the honey producers' need of a thrifty bee has caused us to breed into FOREHAND'S THREE BANDS the qualities that make them **the thrifty kind**; the qualities that have brought them up to a standard **surpassed by none but superior to many.**

For thirty years our queens have been wintering thousands of colonies of bees for the most successful honey producers as far north as the freezing provinces of Northwest Canada. Equally as well they have been serving the beekeepers of the scorching Tropics.

Our success is the result of the success of our customers. Requeen now with Forehand's Three Bands—the Thrifty Kind and you will not be disappointed in your wintering. Next spring their strong, healthy colonies will make 1923 a success for you.

We guarantee pure mating and satisfaction the world over. Safe arrival is guaranteed in the U. S. and Canada.

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To the Wise---

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THE A. I. ROOT COMPANY
COUNCIL BLUFFS, IOWA

---One Word Will Do

REDUCED PRICES

We have had more orders than we could fill each year, yet we are striving just as hard to produce better queens each year as we would if we had more queens than orders, and we believe that each year we are able to produce queens of a little higher quality. We are not in the business for the time being, or to get every dollar out of it we can, but because we like to rear queens and we want to give you value received for your money. After we have reared the best possible queens for you, we want to put them to you, not just alive, so we can get your money, but in the best possible condition.

OUR GUARANTEE: This simply means that, if any queen we sell is not satisfactory in every respect, we will replace her. Our breeding stock and methods of production are such that we can give this guarantee.

Untested.........One, $0.75; ten or more, $0.60 each.
Tested...........One, 1.75; ten or more, 1.50 each.

We have 2,000 Tested Queens, reared late last fall, that we will supply at our convenience at $1.00 each, or ten or more at $0.80 each.

Send for big bargain list of **BEE SUPPLIES**. New sixty-pound cans, two to the case, in lots of fifty cases, at 91c.

The Stover Apiaries, Mayhew, Miss.

Big Reduction

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Bee Supplies

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Slotted section-holders...$3.00 per 100
Sections, 1⅞, No. 1...$10.00 per 1000
Job lots of frames, regular size...............$3.00 per 100
Standard Hoffman frames, 9⅛ deep ....$4.50 per 100
Unspaced wedged top-bar frames, 9⅛ deep...........$2.75 per 100

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THREE MACHINES IN ONE

Simply push the BARKER along the rows (like a lawn mower). Eight blades revolving against a stationary underground knife destroy the weeds and in same operation break up the surface crust into a level, porous, moisture-retaining mulch. Aerates soil. Intensive cultivation. "Best Weed Killer Ever Used." Has leaf guards, also shovels for deeper cultivation. A boy can run it—do more and better work than 10 men with hoes.

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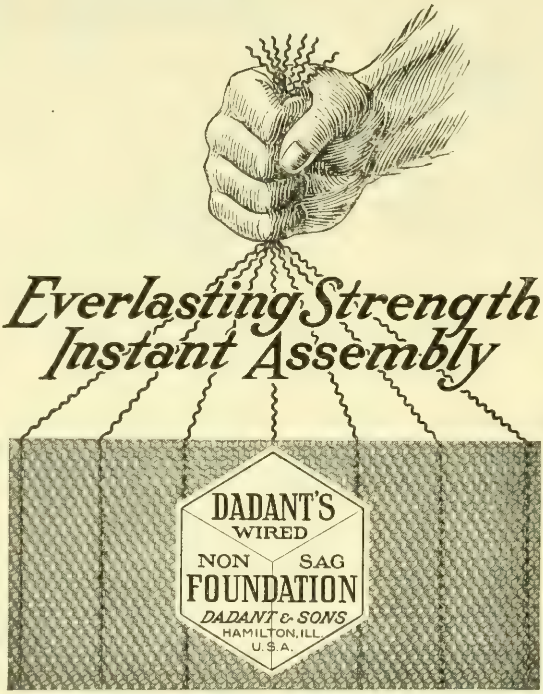
Dadant's Wired Foundation is Sag-Proof

Reinforced with Radiating Shoulders of Strength

The Finished Comb a Delight to the Eye



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I have tried Wired Foundation this year under exactly the same conditions and surroundings, as far as I could tell, with foundation that was wired horizontally. Every frame of the old-style foundation sagged badly and the Wired Foundation made perfect combs. I call it the greatest improvement modern beekeeping has had for many years.—P. C. W.

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I believe this foundation will prove a labor-saver. It can be inserted in a short time. Wiring frames is sure a tedious job at best. There is no sag in the foundation. I threw them quite hard in extracting and for new combs they stood up fine.—B. A. B.

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There has been absolutely no sagging or stretching of cells. There is no question in my mind that this method of wiring foundation is a great step in advance of the old horizontal method, and these vertically wired combs are the best combs I have in my yard.—A. E. B.

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We are glad to say that we have thus far gotten 93 per cent absolutely perfect combs. We have seen no evidence of vertical sagging.—E. G. L.

DADANT'S WIRED FOUNDATION may be used in new-style split bottom-bar frames or in the old-style one-piece bottom-bar frames with equal satisfaction. It is also adaptable to any size and style of brood or extracting frame.

COSTS NO MORE. Since Dadant's Wired Foundation cuts the cost and labor of wiring, its extra price of three cents per pound above the catalog prices of old-style foundation is thus more than returned to the beekeeper.

BEESWAX.—We need large quantities of beeswax and are paying good prices now. Ship to us at Hamilton, Illinois, or Keokuk, Iowa, or drop us a card and we will quote f. o. b. here or f. o. b. your own station as you may desire.

Wired Foundation is sold by all distributors of Lewis "Beeware" and Dadant's Foundation. Send them your orders.

DADANT & SONS, HAMILTON, ILLINOIS

GLEANINGS IN BEE CULTURE

AUGUST, 1922

EDITORIAL

New Officers of American Honey Producers' League.

THE American Honey Producers' League has elected new officers as follows: President, Prof. H. F. Wilson, Madison, Wis.; vice-president, Hon. Colin P. Campbell, Grand Rapids, Mich.; and member of the Executive Committee, Prof. F. B. Paddock, Ames, Iowa. The League is to be congratulated on the choice of men to direct it. May success crown their efforts.

* * *

What Has the Harvest Been?

WHILE in many localities the honey crop is far short of what was expected earlier in the season, the United States, as a whole, has harvested a better crop than last year.

On page 533 we are publishing a part of the Government figures, which show for the United States an average yield of 30 pounds per colony as against 23.7 pounds last year, and 22.5 pounds average for the years 1916 to 1921. The reports of producers reporting for our market page indicate an average yield for these reporters of 79.8 pounds this year against an average of 44.1 pounds last year. The Government figures, of course, are tabulated from a much larger list of reporters more widely scattered than the list reporting for Gleanings. Beekeepers who have secured a good crop should not become panicky in selling, but should put forth every effort to sell to the best possible advantage. It should be remembered that last year there were large quantities of honey held over from the previous year, making the problem of marketing a discouraging one a year ago. Today the old stocks of honey are nearly cleaned up; so, even with a larger crop this year, the total amount of honey in the country is probably less than a year ago.

On the other hand, honey is moving slowly just now, probably on account of the abundance of fruit and berries in the market at the present time. However, honey will keep until the fruit and berry season has passed.

The splendid showing made in disposing of last year's honey crop, together with the hold-over from the previous year at a time when but little honey was being exported, was largely the result of the intensive local selling efforts of beekeepers. Honey was advertised and sold in every conceivable way locally, thus opening up innumerable channels. This year the effort should even be greater than that of last year, in order to hold the ground gained and, if possible, make additional gains. The sum total of the individual efforts of thousands of beekeepers in pushing the sale of honey locally should result in holding prices at nearly last year's levels.

Last year many producers sold their entire crop locally by advertising in their local newspapers. Others sold their crop largely through mail orders, which were obtained by carrying small advertisements in farm papers. Others sold to peddlers who disposed of large quantities by canvassing from house to house. Roadside selling on automobile roads was never before practiced to the extent it was last season. Selling at picnics, fairs and public sales not only helps to dispose of honey but also makes new consumers. Honey should be sold to the American people in every possible way until they form the honey habit.

* * *

Stamping the Net Weight on Sections of Comb Honey.

IT should be remembered that the federal authorities interpret the net weight law as applying to sections of comb honey as well as to extracted honey put up in containers for the retail market. Comb honey which enters interstate commerce must therefore have the net weight stamped on every section. One ounce must be deducted from the total weight for the box, in order to determine the net weight.

Comb honey which is sold in the state in which it was produced, does not come under this law but under the net weight law of that particular state. Some states do not require that the net weight be marked on each section, but permit them to be sold by the section instead of by weight, just as eggs are usually sold. Beekeepers who offer comb honey for sale should find out just what is required by the state in regard to marking the weight on the sections, in order to avoid violating the law. In our "Who's Who in Apiculture," published in the May (1922) issue, page 321, will be found a column showing those states which require that the net weight be marked on honey and those which do not. There is still some confusion in some of the states as to whether comb honey is exempt from the net weight law, on the grounds that it is a natural product, the weight not being entirely within control of the producer. Where there is any doubt beekeepers should write to the state official who is responsible for the enforcement of the net weight law.

* * *

Weather Conditions and Nectar Secretion.

BEEKEEPERS in the clover region of the Middle West, especially those located where there is considerable basswood, will not soon forget the cool dry weather that prevailed during the latter half of June, which dried up the clover and cut down the secretion of nectar from basswood.

Those who have access to the daily weather maps, published by the U. S. Department of Agriculture, will find in them an interesting story of weather conditions for that period, revealing the cause of the cool weather and the drought, which was quite severe in the southern portion of the clover region.

While clover continued to yield, even when it was quite cool, the yield was greatly reduced in the northern portion of the clover belt because some days were too cold for the bees to go to the fields, and farther south the clover was dried up by the cold north winds so that in some places it quit yielding soon after the middle of June.

Basswood bloomed more profusely this season than it has for many years. In northern Indiana it began yielding on June 16, fully 10 days earlier than usual. The day was apparently perfect for nectar secretion in basswood. There was a light breeze of moisture-laden air from the south, and large amounts of nectar could be seen glistening in the blossoms. The roar of the excited bees could be heard quite a distance from the apiaries, and everything indicated an old-time basswood honey flow. The next day a strong northwest wind came spreading a cold dry atmosphere over the land. Such weather usually stops nectar secretion in basswood. This season, however, it did not stop it entirely, but of course reduced it greatly. The excitement in the apiary ceased and the bees worked about as they do in an ordinary clover honey flow. The weather map for that day shows the approaching, from the west, of an area of high atmospheric pressure which brings the cold dry air from the upper atmosphere down to the earth's surface.

Usually these high pressure areas pass by within two or three days and warmer weather sets in, but during the latter half of June there was a series of high pressure areas, one following another, so that cold dry weather prevailed most of the time. When a few days of good "honey weather" did come later, the basswood bloom was nearly gone, but the bees certainly took advantage of the few days that were left. Perhaps farther north where basswood was later, there was a flood of basswood honey such as we in northern Indiana at one time thought we would have. The unusual series of high pressure areas during June undoubtedly reduced the honey crop in the clover belt by millions of pounds.

* * *

How to Reduce Swarming by Better Wintering.

AFTER a month of hard work in his apiaries the Editor returned to his desk early in July somewhat the worse for wear but considerably enriched by experience, as well as having the honey room well filled with supers of fine comb honey.

One of the reasons beekeeping is so fascinating is the great variation in the seasons, each season throwing some light upon the many problems connected with honey production from a new angle so that there is always an opportunity to learn something new. Favorable weather during the spring, together with good wintering, brought on swarming before the honey flow from clover began, but swarming in May in the clover region is easily prevented by giving additional room in the form of empty combs.

Since the Editor does not make the first visit to his apiaries until the beginning of the honey flow from white and alsike clover, the bees are operated on the two-story plan, being reduced to a single story only while the comb-honey supers are on the hives. This extra story is usually sufficient to hold down swarming until the beginning of the honey flow, but this season a third story should have been given in May. For the first time during the 10 years that this plan has been used, there was some loss from swarming previous to the honey flow, because the bees were so badly crowded.

But the swarming season had practically passed by when the clover began to yield, and only a few colonies attempted to swarm during the honey flow. What a pleasure it is to produce comb honey when the bees do not attempt to swarm! The brood-chambers were examined but once to look for queen-cells, after which it became apparent that there would be no further swarming. A similar condition prevailed last year in that locality, so the Editor has enjoyed two seasons without having to fight swarming.

Both seasons the bees had gone past their peak of spring brood-rearing previous to the honey flow, instead of reaching their peak during the honey flow, so that when the honey flow began the vast army of young bees were old enough to work in the fields instead of staying in the hive. Both seasons the weather was such that the bees could work in the fields every day. When the honey flow began most of the bees were in the fields from early in the morning until late in the evening—a condition under which the bees are not much inclined to swarm.

This suggests the possibility of greatly reducing swarming by better wintering and better spring care, so that the swarming season will have passed before the honey flow begins. In localities where the honey flow comes relatively late there is but little trouble from swarming; but, in the clover region, especially in its northern portion, the swarming season usually comes during the honey flow. If by better management the greatest emergence of young bees can be made to occur previous to the honey flow, there would certainly be less trouble from swarming. The few colonies, mentioned above, that attempted to swarm this season were behind the others in building up, so the "swarming season" for these colonies came during the honey flow. Farther north in the clover region where the bees were confined to their hives part of the time during the honey flow, reports indicate that the bees behaved quite differently as to swarming, some reporting the worst season for swarming for years. The reason for this is apparent, for, even though the swarming season proper had already passed, the congestion of the brood-chamber by field bees during an intermittent honey flow is no doubt more conducive to swarming than the congestion brought about by the emerging young bees during the period of greatest emergence. A study of the daily weather maps, published by the Department of Agriculture for June, reveals plainly where swarming was troublesome in the clover region this season and where it was not troublesome.

Inferior Stock Reduces Value of Comb Honey.

ONE great disadvantage in operating apiaries at a distance, so that the beekeeper is in his apiaries only during the honey flow, is the lack of opportunity for systematic requeening and the improvement of the stock. It has now been several years since the Editor's apiaries were properly requeened; and it does not take long to slip backward in the quality of stock, especially for comb honey, when this important work is not done. The lack of uniformity in stock was especially noticeable this season not only in the yield, but, to a much greater degree, in the manner the sections were filled and finished. Some colonies finish the sections of honey in such a manner that they are most attractive, while others do very poor work at finishing. Some colonies fill the sections almost completely without being crowded, while others leave large pop holes at the lower corners or taper off the comb so it is light weight and not really attractive. Some colonies leave a space between the honey and the capping, giving the capping that delicate white appearance so desirable in comb honey; while other colonies leave but little if any space between, which gives the cappings a dingy or water-soaked appearance. At the close of the season some colonies continue to finish the honey well, while others seem to anticipate the close of the honey flow by varnishing the otherwise white cappings with propolis.

The honey flow, except at the close, was of such a character this season that there was no excuse for anything but fancy comb honey, yet the grade of some honey was lowered on account of inferior stock.

The selection of stock is much more exacting for comb-honey production than for the production of extracted honey, for we must not only have hustlers in gathering and storing, but combined with this we must have good comb-builders, good finishers and as little swarming and propolizing tendency as possible.

A few weeks of time spent in selection and requeening in July and August not only insures stronger and more nearly uniform colonies next spring, but for the comb honey producer a careful selection of the breeding queen should result in an increased value of the crop of honey because of its better finish. In addition to this, the enjoyment that comes from building up and maintaining a strain of bees best suited for the production of fancy comb honey is worth all the effort when one can spare the time.

When Removing the Queen Is Better Than Shaking to Prevent Swarming.

COLONIES that swarmed and lost their clipped queens just previous to the honey flow and were prevented from a further attempt to swarm by destroying all but one of the queen-cells, outstripped everything else in the yards this season. In these colonies the young queens began to lay soon after the main honey flow began, so that they were in prime condition during the best part of the honey flow early in June. The few colonies that were shaken to anticipate swarming forged ahead immediately after shaking but soon dropped behind because of their decreasing numbers.

Two years ago the reverse was true in these same apiaries. That season it was the shaken swarms that outstripped all others, even those which made no attempt to swarm, while the colonies which had their queens removed gave the poorest yield; but in that case the best part of the honey flow came while the dequeened colonies were still queenless and immediately after the others were shaken, while this season the best part of the honey flow came after the young queens began to lay. With so much variation in the seasons, especially in the eastern portion of the United States, no wonder beekeepers do not agree as to which method is better.

HARVESTING THE HONEY CROP

Up-to-Date Equipment and Methods Planned to Handle Large Quantities of Honey

By M. C. Richter

When beekeeping reached the outyard stage it did not occur to us to bring back heavy supers and do our extracting at a home plant. Most of us rigged up a small extracting-house at the new yard and did our work there. When we had several outyards a portable outfit, constructed on either a trailer or the bed of a truck, was found to be more suitable than building extracting-houses and duplicating equipment. We soon discovered, however, that the home plant was by far the most practical. In fact it marks an important step forward in commercial beekeeping.

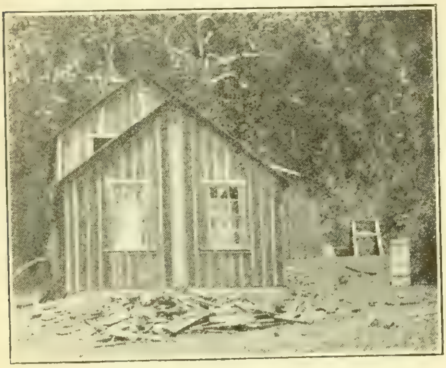


Fig. 1.—Exterior view of extracting plant. The front room contains four 7-ton tanks and faces south permitting the sun further to ripen the honey. Back of the tank room is a storage space, and above this (upper story) is the extracting room. Truck enters garage at right to permit unloading supers into the extracting room.

Outyard extracting-houses were dispensed with, owing to the extra cost of equipment, the loss through theft of equipment and honey, the fact that it is cheaper to rent than to buy outyards and hence a disinclination to build on someone else's land. Furthermore, good locations do not generally remain so for any length of time. Rentals are usually from year to year, the farmers change their crops on cultivated areas, and on natural ranges forest fires are often a menace.

The portable outfit overcame many of the above objections, but with it came new difficulties. Many yards were difficult to reach, owing to their isolated positions. Getting the trailers in and out, and setting up, and the time expended on these operations cut short very materially the actual time for extracting. Moreover, late in the season, when the days grew shorter and cooler the extracting work became more burdensome. Perhaps the greatest objection to both a portable and an outyard extracting outfit is that the extracting is carried on in the presence of the bees. Such a procedure is bound to incite robbing and lower colony morale. A home plant is justifiable if for no other than the above reason.

The Home Plant.

The home plant should be built where it is most convenient. It should be centrally located about yards and near a town where supplies and the like may be readily procured. The central plant need not be located at a yard. Often it is more convenient to have it somewhere else. Most of us have our plants adjoining our homes, and if our dwellings are not on good beekeeping territory we can have, anyway, certain colonies such as our breeder and a few cell-builders. Our queen-breeding colonies need constant attention, and, when cells become ripe, nuclei can be brought in to take care of them. Most of us look at our bees too often. We learn to manipulate colonies less and less as we enrich ourselves through experience. The home extracting-plant fits in very well with this idea.

Taking Extracted Honey.

In the interior valleys where the weather is dry and the alfalfa flow is slow, two to three supers to the colony will handle the intake under ordinary conditions. Owing to the slow flow and the dry weather, combs may be removed while only partly capped; but when the flows are rapid and especially along coast regions where the climate is moist, an entirely different procedure must take place. A colony must have from five to seven supers in such locations. Whether few or many supers, dry or moist climate, slow or rapid flows, the taking of the honey is the same. We take off by means of bee-escapes whenever the honey is ready, and do not wait till the end of the flow. When yards average a super of extractable

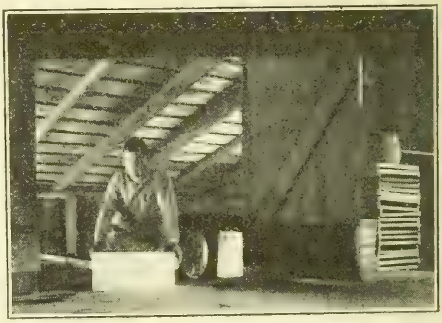


Fig. 2.—View of extracting room looking through doorway into the garage. A truckload of honey is about to be unloaded into the extracting room.

honey to the colony, the full supers are placed above escapes, removed and extracted. Honey produced in interior valleys can be removed when the combs are heavy and the bees have started to cap them along the top. Frequent takes of a super of honey every 10 to 15 days throughout the season, supplying at like intervals a super of drawn comb, will result in a maximum amount of honey. It would be poor beekeeping, with a tremendous waste of honey and an unnecessary outlay of equipment, to tier up six or seven high, and then attempt to extract two or three different kinds of sealed honey late in the fall when the season is over and robbing is severe. It is a rule with us that, whenever a super of honey is ready to extract, off it comes and an empty one is slipped in directly over the excluder. In a rapid honey flow we must tier up as high as five to seven supers above the brood-chamber. On rare occasions we have had as many as seven supers containing practically nothing but unsealed honey. At such times we take off the heaviest super and slip under the others an empty. Our first thought is to give the bees plenty of room at all times during the flow. The honey from a few supers which is not sealed, when mixed with a large quantity of ripened honey and allowed to stand for two or more months in a large ripening tank, even in a moist climate, will be found to be perfectly fit for the market.

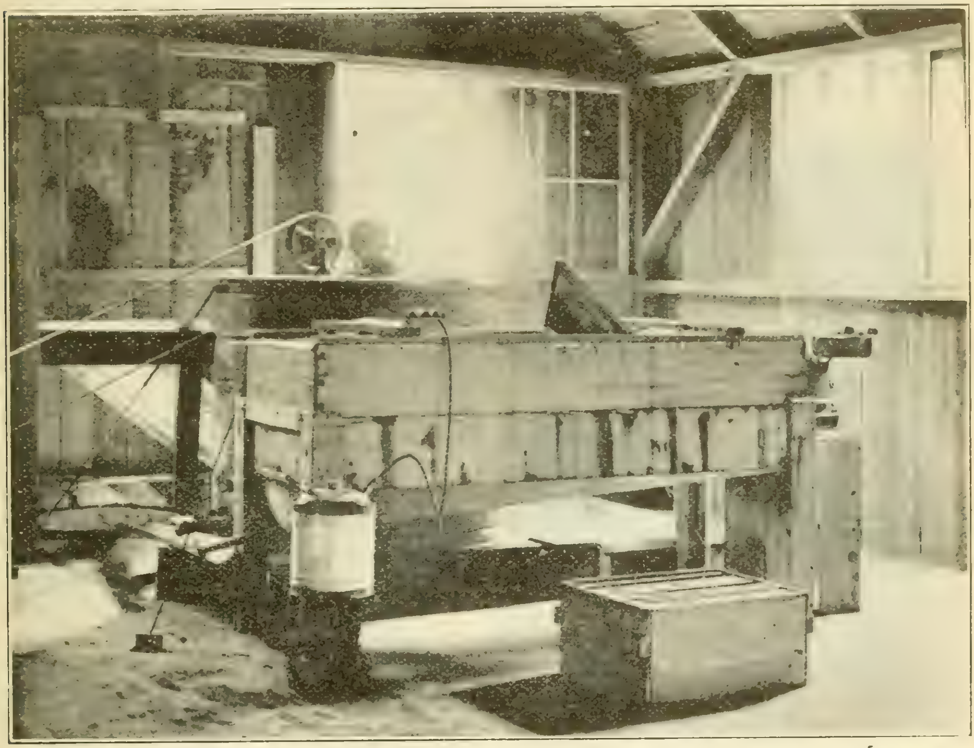


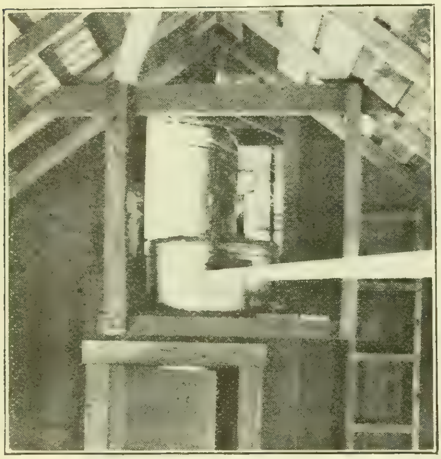
Fig. 3.--Uncapping box with steam heated knife at the left, and ordinary uncapping knife in hot water at the right. After being uncapped the combs are placed in the middle of the capping box shown where the operator of the extractor, who stands beyond the box at the right, can easily reach them. Note the outlets for honey from both the extractor and the capping-box empty the honey into an open trough, which carries it by gravity to the settling tank. The top of the settling tank is shown through the opening into the upper portion of the tank room.

Escapes.

It is our practice along about 4 o'clock in the afternoon to go into a yard and slip escapes under 50 to 60 supers of honey. One man can do this work in from one to two hours according to conditions. It is important to leave one, and preferably two supers, either empty or partly filled, between the escape and the brood-nest, so that the bees will have somewhere to go during the evening. Some difficulty may be experienced in ridding supers from bees when the first honey is taken off, if the colonies were Demareed. Unless it is a week after all brood emerged in the upper stories, some of the younger bees may cluster with the few drones that are present. If honey is removed early in the morning, it is a simple matter to shake these few bees from the combs. Early the following morning, after the escapes were inserted, a truck calls at the yard with about as many empty supers as there are full ones to take off. If the flow is in progress the empties are slipped underneath the other supers, otherwise, they are placed above so that they may be cleaned. Two men usually do this work, and it takes less time to take off honey in this manner than it does to put on the escapes. One hour more or less at a time, and on different days, for every ton of honey removed, certainly minimizes robbing, and is by far the best way to remove the crop. Is it not certainly better on the morale of the bees than when we extract all day long in the yard?

Loading.

The bed of our truck, which is covered with galvanized iron and with 1½-inch angle iron running around the sides and back, is built to accommodate 25 supers. When the truck leaves the plant in the morning, say with 50 supers of comb (piled two high on truck bed), it proceeds to a yard which is usually arranged with double rows of colonies on either side of the roadway leading through the apiary. The truck will stop at one end and unload the first two rows (20 supers), over which a canvas is thrown. It then proceeds to the other end of the yard, turns around and commences loading on the full supers, the men on their return trip taking the empties from the truck and placing them where needed. When the 50 full ones are loaded the canvas is thrown over them, and the 20 empty supers are put on the colonies from which the last honey was removed. The escapes are gathered up next, the load is roped and the truck speeds off to the plant.



View from south end of the tank room, showing the location of the settling tank below the outlet of the extractor yet high enough so that the honey flows through the open pipe from the settling tank into the 7-ton storage tanks below.

The garage is part of the home plant (see Fig. 1). When the truck is inside its doors, they are closed in order to conserve warmth and render the building bee-tight. A door along the side of the garage opens into the extracting-room through which the supers are transferred for extracting (Fig 2). During extracting, the empty supers may be placed directly on the truck and thus avoid their being handled a second time.

Extracting-Room.

We trust that Figure 3 will give some idea of the arrangement of the extracting outfit. In the foreground directly in front of the uncapping box are placed the full supers of honey. When we are harvesting white honey we prefer a two-man uncapping box. This box is large enough to take care of the cappings of two to three tons of honey. The cappings are allowed to drain till the next extracting, when they are shoveled into a large draining tank until the end of the season when we have time to press out the balance of the honey. For darker honeys we make use of the capping-melter.

We like the 8-frame Buckeye extractor for the reasons pointed out by E. R. Root in the July (1921) Gleanings. Its chief asset in our minds is that it is a great timesaver. When we are not rushed, we utilize nearly four hours to extract one ton of honey. In this manner combs are uncapped carefully and there is time enough to extract clean, as well as mend any combs or supers that might need it. On the other hand, if we should be rushed during a heavy honey flow, which, of course, means that there are some colonies that need room, we can then extract a ton of honey in two hours with a three-man crew. Any colony, during an excellent honey flow, that is crowded for the want of storage cells, is losing perhaps pounds of honey every so many hours before the beekeeper can give it relief. We believe that it is better to uncap hurriedly and not extract clean, when we know that our bees are suffering for want of room and that we should give them instant relief.

Super-spacing is for eight frames and we do not uncap deeply until the season is over, at which time we are very finical about the way in which we trim up our combs so that they may appear all the more attractive to our young queens during the following spring.

A three-man crew during the extracting season can handle a very nice crop of honey. With ample super room, 50 tons of honey can be harvested by three fast and energetic hands. The hours of extracting, when no rush is on, are usually from nine to five o'clock. From seven to nine in the morning two men bring in the honey, while the third man tunes up the three-horsepower engine, touches up the knives, attends to the uncapping box and the like. At four in the afternoon one man puts under the escapes while the others finish extracting. The flow of honey from the extractor and the uncapping box into the settling tank, and thence into the seven-ton storage tanks, works automatically and needs no attention whatever.

Big Sur, Calif.

THE BEE-TIGHT HONEY-HOUSE

Its Relation to American Foul Brood Control. Why Many Fail to Eradicate this Disease

By S. B. Fracker
State Entomologist of Wisconsin

A LETTER which came to the office the other day told a story something like this: "Called on Mr. S. yesterday and found he had had American foul brood in his yard of 55 colonies last spring. When he had treated the bees he carefully stored the honey in his 'bee-tight' honey-house until he could finish the pressing spring farm work. One day his sister looked out of the window, wondered what the bees were doing and discovered the whole beeyard had found the supply of infected honey in the old supers. They were busy going in through the keyhole and out through the bee-escapes on the windows, carrying the honey out and distributing it through the apiary. That evening they found the combs in the bee-house almost empty of the diseased honey and soon every one of his treated colonies was diseased."

In spite of knowing good control measures, experienced beekeepers are having many troubles similar to the story told in this letter. The persistence of disease in large apiaries is so marked and its permanent elimination so difficult that our chief inspector remarked to the writer in October, "In all my work in Wisconsin I cannot recall a single apiary which has eradicated an American foul brood infection and become entirely clean, by treating the infected colonies." At the time, I could not remind him of a successful case, but the statement was so striking that I have since gone through the inspection records to find out whether the shaking treatment is resulting in the eradication of disease.

Treatment Less Effective Than Destruction.

In four counties we have the foul brood record, since 1918, of 163 infected apiaries in which we know the control method employed by the beekeeper. Of these, 64 applied the shaking treatment while 99 destroyed their infected colonies, repeating as often as necessary. Among those who treated the diseased colonies about one-half (27) had yards free from foul brood at the 1921 inspection, showing that the others spread disease during treatment or stored infected material where the bees had access to it. Among the beekeepers who destroyed the infected colonies, only one-fourth still had disease in their yards this year. It is clear that some beekeepers are successfully eradicating disease by treating, but that others are not getting satisfactory results. In different areas there is a marked difference in the results obtained. In only one county could we say that the beekeepers have failed in their attempts to control foul brood. That is a county which insists on treating infected colonies, and judging from the records the beemen of that county will still be "shaking bees" long after their neighbors have forgotten such disagreeable topics as bee diseases.

Why Many Fail to Eradicate Disease.

The purpose of this paper is to discuss some of the reasons that there are so many beekeepers, 59 in the counties just referred to, who treat or destroy their diseased bees but have been unable to eradicate the disease. If we were to publish this list of 59, the many familiar names would form a "who's who" of beekeeping in this part of the state. Of all those who have failed to eliminate infection in three seasons, only two own less than 10 colonies of bees and most of the yards are from 30 to 100 colonies in size. They are not careless "bee owners," but are uniformly the progressive, hard-working commercial honey-producers of whom beekeepers' associations are composed.

We all remember the details of the various treatments for American foul brood, and any beekeeper can take printed directions (if he does not know them already) and treat a colony of bees successfully. But that isn't eliminating disease from an apiary—not by many a weary season. At least the unlucky 59 will tell you it isn't.

There are only three things we forget when we fail to control foul brood and none of them is given in the printed directions:

First, the appetite of the bee.

Second, the size of the bee.

Third, the size of the germ which causes American foul brood and which lives indefinitely in honey from a diseased colony.

All three are "first reader" facts in apiculture; but several thousand commercial beekeepers may well be uneasy about their 1922 profits, because they neglected these three little facts in 1919 and 1920 and 1921. Treating the infected colony is only the first step toward eliminating disease. To illustrate:

Not long ago an inspector went to look into a case in which repeated treating had not succeeded in freeing the apiary from disease. After talking things over with the owner, they went into the honey-house where it was admitted a large supply of honey and comb from infected colonies was sometimes stored. As usual the beekeeper was sure his honey-house was tight, although he was unable to explain the presence of so many bees. A careful search revealed the fact that the bees were making regular trips between the apiary and the honey-house, entering through a crack in the cement floor and leaving whenever the door was opened.

Are Honey-houses Ever Bee-tight?

Not long ago an old German beekeeper was observed sitting motionless on an empty hive, eyeing his bee-house closely while puffing at his pipe. When there appeared to be no sign of life in his figure, a friend came up and inquired what he was thinking about. It developed that the building was full of bees and he was trying to see how they were getting in. The storage room had arrangements for heating, and it was later discovered that the stovepipe offered so large an entrance that a good-sized honey crop could all have been removed by the bees in a short time if they had found as convenient an exit.

In some cases there is a missing window pane in the bee-house or a half-inch crack in the siding. Even if the building itself is tight, enough bees can come in with the proprietor, as he carries supplies back and forth, to cause all sorts of trouble. The placing of a few bee-escapes in the corners of the windows is a common arrangement and a good one in the absence of disease.

In the office we have a proverb which is the basis of one of the ten commandments of foul brood control. It is, "There is no bee-tight honey-house." Even if we should equip one with a vestibule, arranged so the inner door could not be opened unless the outer one was closed, we should probably neglect an entrance somewhere else, large enough to admit a cat, to say nothing of a few bees.

The storage of infected material in the honey-house is one of the largest factors in maintaining diseased yards. It provides a source of continuous infection as serious as keeping the carcass of a cholera-killed hog in the barn, or tying a mad dog with a string. As long as diseased honey exists anywhere, it is a menace to every apiary within reach.

Permitting old comb, on which colonies have died, to remain outdoors for months is another common form of criminal carelessness. Sometimes the owners are members of beekeepers' societies, readers of bee journals, so experienced in bee-disease control that they had treated infected colonies annually for from five to thirty years! This past summer inspectors have cleaned up four such cases, including hundreds of hives and thousands of frames and extracting-combs. Every week the rain would soak up a few scales of American foul brood in the old comb, and a few stray bees, attracted by the odor, would carry a few bacilli to a formerly healthy colony. Every year some neighbor would try to "keep a hive of bees or two" and would soon give it up "because they didn't do well."

It would be interesting to take a vote of the readers of this paper and ask, "How many have infected material stored in a 'bee-tight' honey-house?" "How many have fragments of old comb in the old weathered hives behind the barn?" "How many, last August, had hives containing infected comb piled in the woodshed, standing bee-tight until Johnny came in one day and pushed over the pile?"

If we want to reduce taxes, as we all do, let us first cut off the toll we are paying to the foul brood germ, *Bacillus larvae.* Twenty-seven commercial beekeepers have stopped the payment of that tax in Wisconsin counties by carefully treating the bees and destroying infected material. Forty-seven have accomplished the same result by destroying both infected bees and material. But 59 real honey producers are still paying that same tax in those same counties because of the points that are forgotten when treatment is applied, namely (1) that bees like infected honey if they can reach it; (2) that they can crawl through a space a quarter of an inch across; or (3) that the cause of disease is a germ which may be lurking in the most microscopic drops of honey.

The Area Clean-up Plan in Wisconsin.

Just a word in conclusion in the way of a progress report. The spotted, one-county area campaigns are beginning to take a coherent form, and the entire eastern part of the state from Milwaukee and Madison to upper Michigan, except Ozaukee and Washington counties, is now being covered. Six counties in this area seem to have no American foul brood at the present time and five more have only an occasional colony showing disease. In the remainder, where losses from American foul brood approached the nature of a conflagration three years ago, the problem in all but one or two counties has reduced itself to one of discovering and putting out the remaining sparks.

Eradicating the last cases is proving a difficult task. When only one colony in two hundred is infected, locating and cleaning it up without causing new infections require careful work. The beekeepers everywhere are giving excellent support—particularly the one-colony "bee owners"—and the unpleasant reception inspectors used to meet from irate housewives has become a rare occurrence.

In Fond du Lac and Dodge counties work was begun this year and plenty of infections (472 colonies) found. In Dodge County two-thirds of all the inspected yards showed American foul brood. Neither county was completely covered even once, but the survey will be finished next season.

The older clean-up areas are still showing a few cases of disease but they are destroyed as fast as discovered. In Jefferson County such was the fate this year of three per cent of the colonies inspected. Some other counties showed the following percentages: Langlade 2⅓%, Sheboygan 5%, Marathon 3/5%, Milwaukee 4%, Winnebago 3%.

In all the counties named only the infected parts were surveyed and the percentages would be much lower if we included all the bees in the county. Over 10% of the colonies in the vicinity of Madison and

Stoughton are still diseased, but less than 2% of the total number in the county.

Of course, the last traces of disease will be hard to find and will require persistence to eradicate. But with the energetic work of the honey producers American foul brood is sure to become more and more uncommon, and I do not believe it is too much to say that it may eventually disappear.

Madison, Wis.

PACKING COMB HONEY

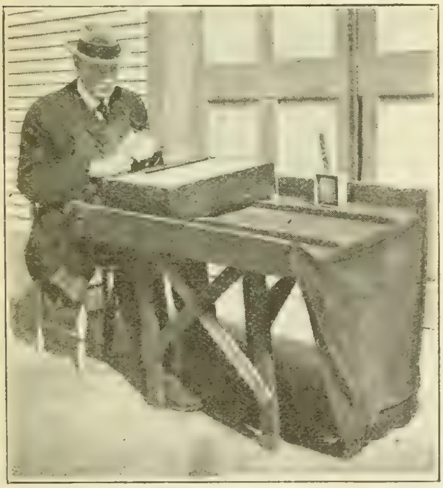
Every Step in the Care of Comb Honey from the Hive to the Market

By J. E. Crane

A SERIOUS objection to the production of comb or section honey is the amount of labor required properly to prepare it for market. We may extract our honey and let the bits of wax rise to the top of the tanks, draw it off into five-gallon cans, place them in cases, nail the lids on the cases, and the crop is ready for market. It is quite another thing with comb honey.

It should be looked over, soon after it is taken off, to see there are no cells of pollen or brood as will sometimes happen, for worms very often develop about such cells and make a dirty mess. We aim to look it over and clean off propolis soon after it is taken off, before worms have had a chance to get in their work.

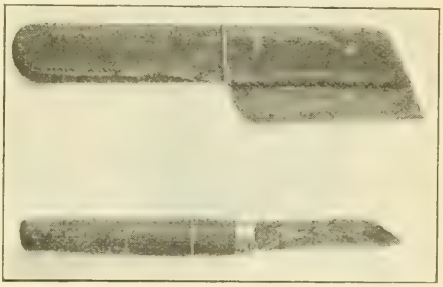
Some of my beekeeping friends spread all their section honey on shelves or under a roof or in an especially warm room, for the honey to ripen, but we have found a dry chamber to answer very well. If any worms start, place in a close vessel and with it a teaspoonful or more of carbon disulphide and they will give us no more trouble.



A handy table for scraping sections. Note the convenient height for ease in working and the aprons attached to the ends, which keep the propolis from the operator's clothes.

Scraping Propolis from Sections. Freeing sections of propolis is quite a task when a large amount of comb honey is produced, and especially so in some sections. We find it much worse in some yards than in others only a few miles away.

To clean sections of propolis in a close room full of flies, with the thermometer at 85°, and the propolis sticking to the scraping knife, hands, clothes, chair and the floor, is no very pleasant job.



Knives suitable for scraping sections are difficult to find. These have blades about 2½ inches long, straight edges with ends tapered to a sharp point.

We cannot always get rid of the heat, but an electric fan will relieve us of much discomfort, and all windows should be screened to keep out the flies. Paper laid over the floor will save it from most of the propolis that would otherwise stick to it. A comfortable chair to sit in will prevent excessive weariness.

A Convenient Scraping Table.

A table just right, and made on purpose for this business, is a great help. It should be high enough to come just above the knees as one sits in the chair. The table I use is two feet wide and three feet and three inches long. Four-inch boards nailed to the sides help to keep the propolis on the table. Two cleats, ⅞ by ⅞ inch, nailed on top of the table for the supers to rest on and keep them above the propolis on the table, are very useful. An apron is attached at each end of the table so two persons can work, one end of the apron being attached to the end of the table and the other end having a loop to go over the neck and hold the apron over the lap and breast.

Special Knife for Scraping.

A good knife is a most important tool but somewhat difficult to find. It should be of the best steel, the edge straight, the blade about two and one-half inches long, with the end tapered to a sharp angle. Since I find it difficult to buy just what I want, I sometimes have taken an old steel case knife and broken the blade to the right length, then beveled down the end on an emery wheel. An old file is very useful in keeping the knife sharp, for it must be kept sharp to do the best work. It is important to have a shallow dish of machine oil with which to oil the scraping knife frequently as we work. A person who has not used it will be surprised to see how it helps to keep his knife and hands free of propolis in hot weather, and relieve one of the most disagreeable features of cleaning honey. If sections are very badly glued up on top of the super, we scrape them off with a heavy knife or hive-scraper, before taking out the sections.

Sealed cartons make a sanitary package for sections of comb honey. Fancy comb honey is worthy of a good package.

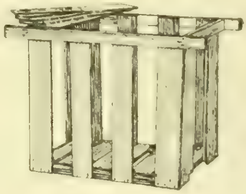
We use plain sections, i. e., all sides the same width. I find it requires an hour to clean 100 sections, or, to be exact, an average of 96 an hour, but most help will not do nearly so many.

Weighing and Grading the Sections.

Some persons weigh their sections as they clean them and place them at once in shipping cases. We prefer to clean our supers of propolis as we remove the sections, and return the sections to the clean supers and then weigh and sort them later. As we weigh them we place each weight by itself, so that all the sections in a case will be of the same weight. We think it right to ask more for a case of sections where each one weighs 14 ounces net than for a case where the sections weigh only 12 ounces.

Each Section Is Placed in a Carton.

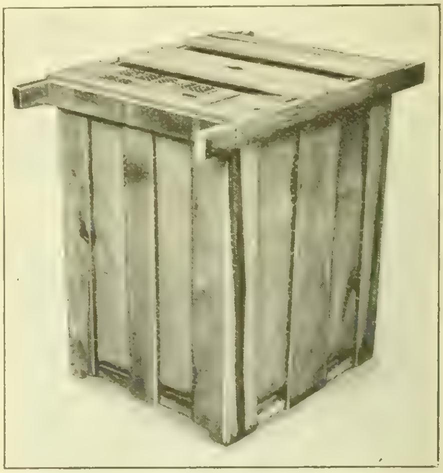
Our work is not yet done. We must place each section in a nicely printed carton and these cartons in shipping cases, just two dozen in a case. Our honey will appear at a great disadvantage in a first-class grocery store, unless it is covered to keep out dust and flies.



Shipping case filled with sections of honey without cartons. When cartons are used it is not necessary to use glass in the shipping cases.

Cases Must Be Packed in Carriers.

One thing more. We have found that freight and express matter is handled so roughly in the last few years that it is wise to crate comb honey when shipped in less than carload lots. In fact, many railroads make crating comb honey a condition for receiving it. Consequently crates must be made for all our fine cases of honey, which adds much to the work of producing comb honey for market.



Crate or carrier for eight cases of comb honey The carrier is deep enough for an inch cushion of straw in the bottom. The lining of paper keeps the cases clean. The handles suggest to freight-handlers that the crate should be carried, not dumped, and a warning in large letters stenciled on top tells of the fragile contents.

When we add to this the extra work and expense of buying sections and foundation and getting them ready to place on the hives, it is evident that comb honey should sell for one and one-half or even two times as much as extracted honey in order to pay for all the extra work and expense in producing it.

ALFALFA HONEY PRODUCTION

Some Basic Principles in Beekeeping in the Alfalfa Region of the West

By M. A. Gill

IN writing upon this subject I shall confine myself to that zone which embraces the Intermountain states, and shall not advise any particular mechanical mode for harvesting the crop, as almost every producer has his own way of taking his crop, after he has produced it. In almost all this region, we are confronted with conditions, not theories, as to how to produce the most honey.

Long Building-Up Period and Long Honey Flow.

As a rule, we have a longer period in which to prepare for the honey flow than the middle West or the eastern states, and also a longer honey flow, after it once starts. Most of our honey comes after the honey flow has ceased in the above-mentioned sections.

As a rule, our bees build up very rapidly in early spring, during which period a certain per cent of colonies will swarm and brood-rearing is carried on to the limit; then frequently we have a lean spell, that checks swarming and brood-rearing, and is a very anxious time for the beeman, for he knows that bees produced in May and the fore part of June will not be with him when his August honey flow comes. He also realizes that, if his working force is not kept up, much of the yield from the first alfalfa bloom must be used in getting his brood reserves in condition for the August honey flow.

Usually the best colonies have stored a surplus during fruit, dandelion and willow bloom, that can be used by the less-favored ones to keep them breeding, and which also uses up this amber honey and keeps it from becoming mixed with the first extracting of white honey.

Swarming Ceases When Main Honey Flow Begins.

When the main honey flow starts, swarming will cease if ample room is given, for there is no condition that checks swarming like a heavy honey flow. All colonies which were at their zenith when the main honey flow starts, will deteriorate somewhat during a long honey flow; while those colonies that were on the ascending scale will cast a few August swarms, or at least try to do so. But this is a condition that pleases the beekeeper, for he knows that he is securing a good crop of honey.

Another condition different from those in the lower altitudes of the East is that we cannot pile up our surplus on the bees and leave it until the close of the harvest, for it is next to an impossibility to extract honey that is left on the hives all through July and August.

Management During Heavy Honey Flow.

I feel confident that, during what is known as an unusual secretion of nectar, much honey is lost, especially in out-apiaries by the beekeeper not knowing just what his bees are doing. This can be avoided by having a colony on the scales at the home yard; then if the scales indicate from ten to twenty pounds per day, something must be done quickly by the bee master, either by extracting or giving more room.

In a business of several hundred colonies the bee master cannot afford to lose a mental grasp of his situation by joining the extracting crew, for this can be done by less experienced men and nothing should be left undone that will produce a pound of honey, for now is the accepted time. We can produce honey only when it is coming from the field. At such times some men spend considerable time trying to get their weak colonies to producing. This is commendable if there will be a later honey flow, but sufficient unto the day is the evil thereof, and it is only the colonies

Class of vocational men taking course in beekeeping. M. A. Gill, instructor, at right. Photograph taken at the Utah Agricultural College apiary.

that are prepared that can take advantage of the conditions above mentioned. We have kept our bees a whole year waiting for these conditions, and while the reserves (the brood) are quite necessary, this particular battle is won only by the bees that are ready to go over the top.

Last year a colony on the scales at my home yard gathered fifty pounds in three days after their honey was extracted, and it was nothing more than a representative one among two hundred. I lost much honey at an apiary four miles out, that was equally well situated, because I was unable to empty them or give more combs during this short and sweet flow.

Having been a comb-honey producer exclusively until recent years I have not been properly equipped for the production of extracted honey, but I am building an extracting outfit equipped with a power extractor and shall arrange to have the honey run by gravity from the extractor to a three-ton horizontal tank. In going from the extractor to the tank it will run over a hot plate heated by electricity with delayers so timed and graduated that the heat will not discolor the honey in the least, but will cause it to remain liquid longer. Is there any better way to do this?

M. A. Gill's home apiary of 240 colonies.

Strip Off Supers Before Honey Flow Ceases.

In the production of extracted honey I notice that some men keep the extractor going just as long as there is any honey coming in. These, if they do any feeding at all, try to fit the colony for winter by hanging in a comb or two of honey. This, I think, is a mistake. As a producer of both comb and extracted honey I have noticed that comb-honey bees, as a rule, winter much better than those used to produce extracted honey. So I make it a rule to anticipate the close of the honey flow a few days, and strip off all supers. This gives the bees a chance to arrange their winter nest and fill up the same as do comb-honey colonies, and avoids all robbing, as is often the case when the last extracting comes after frost or when the honey flow has stopped.

Wintering in Two Stories.

I wintered one pack in two-story hives the past winter, and they seemed to have wintered better than in single-story hives. They were clustered in the top story this spring; but, as little heat is lost downward they have not the brood now that the hives wintered in single stories have which were given a second story when needed.

I think this proves the great benefit of the tiering-up system that bees follow the heat in brood-rearing.

It is not so much the size of the hive as it is the seasonal conditions and the manipulations that prevent swarming and that secure the greatest amount of honey. I want to remind the large-hive advocates that some 36 years ago a man by the name of Spencer (as I remember) produced 1020 pounds of extracted honey, the product of one queen from a ten-story eight-frame hive, and I do not recall when the yield has been excelled.

The alfalfa weevil has disappeared in this locality, and we have had the heaviest June flow within the past six years.

Hyrum, Utah.

FROM THE FIELD OF EXPERIENCE

QUEEN INTRODUCTION

Two Little Kinks that Should Save the Lives of Many Queens in Introducing

Someone, I think it was Doolittle, gave us a sure way of queen introduction. His method was to take several frames of capped brood, brush off all bees, put the frames into a hive, close the entrance and carry it into the house or somewhere that the temperature might be right. Then the queen is to be turned loose on the frames of brood, the cover placed on the hive and left for four or five days. It was then to be put outside if the robbers were not too bad, and an entrance large enough for one bee to pass was given. If this is carefully done it is a very sure method, the principal feature that condemns it being the time and work it entails.

Someone, I do not know whom, thought to improve upon this method and recommended that the combs of capped brood be set over a strong colony, with a wire screen between the hive-bodies, that the queen and brood might have the benefit of the warmth of the colony below. Now instead of improving upon the first method, he completely ruined it; for, if the combs of emerging bees are put over a colony, it is one of the poorest of all methods of queen introduction. I confess I am puzzled to know what makes the queen die when put in this upper story, but a large percentage of queens die for some secret reason of their own or are killed by the bees on the other side of the screen. It does not seem possible that bees can sting through the wire screen; but my assistants, who nail up the queen cages, frequently get their fingers stung through the wire screen. This last season I had seven different parties write me, stating that they lost queens when they were placed above the screen as has been recommended. I have advised that they carry the hive into the house instead of putting it over another colony, and no loss has been reported.

Dr. Miller gave us the newspaper method of uniting bees, and it works to perfection, with never a bee killed. A number of years ago I thought to improve upon this, and I had a number of screens made to fit the hives, and set the queenless hive on top. I was greatly surprised upon looking at them next day to see from one-fourth to one-half of the bees dead in the upper story. What killed them was a puzzle. No doubt the same thing that caused the death of the bees causes the death of queens when introduced above the screen.

Kink No. 2.

When you take out the frames of brood to remove the old queen before introducing the new one, be sure to put the frames back into the hive in the same order in which you found them or you will lose some queens. This applies to any method of introducing a queen to a full colony. Now if you do not do this let us see what happens. You put the frames back any old way and you put a frame of honey in the center of brood-nest and leave frames with brood in all stages on both sides of this frame of honey. Before the queen is released the bees start queen-cells on the frames on both sides of the comb of honey. When the queen is released, she never dreams that any one has been monkeying with the brood-nest and supposes it is in one part, the same as any well-behaved bees would have it. She takes a swing around the circle and orders all queen-cells to be destroyed. But she never surmises that there is another brood-nest the other side of that comb of honey, and goes on laying. Sooner or later a young queen emerges from a queen-cell on the other side of that comb of honey, and the first thing our nice laying queen knows she sees a virgin come over the top, which means her finish. It does not always happen thus, but I have lost many queens in this way before I found out the reason. Sometimes the queen would be laying for a week before the virgin could kill her. Many queens that are purchased are lost from this cause. Sometimes a beekeeper will be puzzled to know why the queen was superseded (?) soon after she began to lay. She was not superseded, she was killed. In removing frames from the hive, it is a good plan to take out the frame nearest you and set it down beside the hive. Then as you examine the others, put them back in the same place you found them. When through, put the frame that you first removed back in the place nearest you. Jay Smith.

Vincennes, Ind.

CAPPING - MELTER AND BOILER

How to Provide Plenty of Steam for Extracting Purposes

The following letter and my reply may be of interest to some of the readers of Gleanings:

Dear Friend:—I read in Gleanings for July, 1921, your description of the capping-melter you use, and thought it came the nearest to what I wanted of anything I had seen yet.

I understand you have a box 18 inches wide, 4 feet long and 11 inches deep, with one end open. Do the melted wax and honey run out all across this open end, or have you a spout at a certain place? Do you tilt the whole box or just the bottom? What is the proper angle so as to have it run off quickly enough?

What shape is your 10-gallon boiler, and what material is it made of? Is it necessary to have

FROM THE FIELD OF EXPERIENCE

a safety valve on it? You speak of heating it on a Perfection water heater. Is this the same as the ordinary Perfection oil stove used for cooking, etc.?

Now that you have used the outfit for some time, have you any suggestions of improvement as to size or anything? I want room for two to uncap at once. Where do you place your combs that are uncapped while waiting for one batch to go through the extractor? I have used one end of my uncapping box for this.

I will be very thankful to you if you will give me the information, and hope it will not be taking too much of your time. Wm. G. Anglin.

Brewer's Mills, Ont., June 1, 1922.

''Dear Mr. Anglin:—I shall answer your questions seriatim. The wax and honey do not run out all across the end of the melter, but the metal is folded up, leaving an outlet of three or four inches wide. This must be open so a scraper can be used to clear out what has not fully melted. One secret of success in rendering cappings without injury to the honey is to get it away from the heat before it is fully liquefied. That is why it is undesirable to attempt to get commercial cakes of wax from the melter, as it is not necessary to heat it to that extent to separate the honey. All the capping-melter is for is to separate the honey. Then the wax is remelted in the winter to clarify it.

''The box is built with the legs all equal length; then, in use, an inch block is placed under each leg. Sometimes two-inch blocks are used. You soon find the necessary height.

''The ten-gallon boiler is the same shape as the 30-gallon boiler used for heating water for the bathroom from a water front in range or furnace. It is galvanized iron and is tested for some 200 pounds pressure, I am told. It might be wise to have a safety valve, and a glass water gauge is an absolute necessity.

''The New Perfection water heater is made by the same people that make the oil stove, but is made specially for heating bathroom water during the summer when the furnace or range is not in use. After using it one year I thought I had discovered a serious fault in the heating element which comes directly over the fire becoming choked with scale from the hard water, and there seems no way of cleaning it as the parts are solid castings with no provision for cleaning out the heating flanges. Last fall we undertook to melt wax with the steam from this by turning the steam directly into the melter containing old combs and water. It boiled away all right for the first day; but when the fire was turned out at night the boiler, as it cooled, sucked wax and slumgum back into the ''works'' and choked everything up. This was what we might have expected had we given it any thought, but it seems as though we have to try some things ''once.'' After a lot of fuss we got the system circulating again and, of course, did not try the wax again; but this spring it choked again, and the plumber reported it was choked with scale. Since then we have discovered it was only some more slumgum, which had lodged somewhere for a time and then got out where it would stop circulation. This has been cleared, and we are hoping our troubles are at an end. It is very handy for hot water, but for melting the cappings from 5000 pounds per day we found it a little slow and are installing a six-horsepower steam boiler. I mean a *real* boiler, and hope to have comfort in extracting, melting wax, making feed and so on. Incidentally we are installing a steam engine to run the extractors. But that is another story on which we hope to have a report later.

''The melter is plenty large enough for two to work and place the combs on one end, as you suggest. That is the way we do.''

Georgetown, Ont. Morley Pettit.

* * *

ICE CREAM CONES FOR HONEY

Novel Way of Selling Honey at Fairs. An Effective Method of Advertising

Suggestions for advertising honey are always in order, and, as it is nearly time for the county fairs, a little stunt we pulled off here last fall should be of interest

In connection with our apiary exhibit at the fair we sold what we called ''honey cones.'' We took the small-sized ice cream cones, and with a piece of broken section placed therein from an ounce and a half to two ounces of candied honey, and sold them at five cents. It is surprising how the kids will lick them up and come back for more. Also many of the grown-ups have a sweet tooth and will try them out. A piece of section makes a very satisfactory spoon, as it is flat and will easily scrape the honey off on the edge of the cone. The more solid the honey is, the better, and you quickly become expert in gauging the amount for each cone.

If you have a good ''barker'' you can simply sell the cones at your exhibit, at the same time telling the people the advantages of candied honey, or you can have them peddled through the crowd.

This is one way of advertising and making the people pay for it, along the same line that the late Elbert Hubbard used to advertise Roycroft wares on his lecture trips. You are selling your honey at 40 cents a pound, and at the same time calling the attention of the people to honey and increasing the home demand many times.

There is no reason why some one with enterprise and push should not sell honey cones in every holiday crowd. They should also be advertised at soda fountains and lunch counters. G. H. Buffum.

Sheridan, Wyo.

FROM THE FIELD OF EXPERIENCE

NOVEL WAY OF TAKING HONEY

Getting Away with Load of Honey in Early Morning Before Robbers are Abroad

No robbing whatever, with its furious stinging, its annoyance to neighbors, its loss or injury to colonies, need be experienced, if our plan is followed, for taking combs of honey from the bees for extracting during a very light honey flow, or after the flow is over.

We load the truck or trailer, one or the other, with supers of empty comb, if there is to be a later honey flow, and leave home early so as to arrive at the apiary and have our smokers going in fine order ''at the first peep of dawn.'' One jerks out combs of honey and stands them on end around the hive and leaning against it, or against each other, touching at upper end only, so as not to crush bees. Helpers follow as closely as possible, shaking and brushing the bees from the combs, placing them in supers and on the truck or trailer. One spends part of his time in putting supers of empty combs on the hives, in place of those removed, if there may be a later honey flow.

By this plan, just as the bees begin to fly freely, we have the canvas tied over the load, and are on our way. The bees are not nearly so cross as when the honey is removed during their working hours. Peace reigns in the apiary, neighbors are not so often annoyed by cross bees, and the bees are left free from the robbing mania which results from taking honey by the usual methods during a dearth or a poor flow.

It was claimed by the Pettits, years ago, that combs of honey, covered with bees, could be quickly set out of the hive, then picked up and brushed, with far less stinging than when brushed at once on taking from the super—and there is some truth in the claim; but, if the ''jerker'' gets far ahead of the ''brushers,'' the bees on the combs may become very cross.

Mr. Goodrich of Fresno, Calif., before beginning to extract an apiary, contracts all entrances, so that only one or two bees can leave or enter at a time. He says that then, even though it is robbing time, robbing does not make much headway; for if a super of wet combs is put on a colony and hundreds of robbers are on those combs before the hive can be covered, it then takes the robbers so long to find their way out through the contracted entrance away down at the bottom, that when they do escape they are no longer a menace and cannot well enter again.

Very extensive beekeepers have told me that they controlled robbing at extracting time, by setting out a few stacks of supers with empty combs from the extractor, a little distance from the apiary, to attract the robbers, and repeating this as needed; but with our apiaries, this is ineffectual, as I fully believe that any number of such supers of wet combs, short of ten to the colony, only suffices to stir up the bees the more; in fact the entire apiary seems to give up all other activity, to indulge in robbing.

''The peep of dawn plan'' may solve some of your troubles as it has solved some of ours. E. F. Atwater.

Meridian, Idaho.

SPIDERS TO CONTROL WAX MOTH

Combs Stored in Open Hive-Bodies Safe When Guarded by Spiders

Seven or eight years ago J. L. Byer of Canada told, in an article, of leaving his empty extracting-combs piled up outdoors, trusting the spiders to protect them from the wax worms. The idea seemed to attract but little attention, except that a few beekeepers poked a little fun at Mr. Byer.

I thought the plan seemed reasonable, so I tried it and have now for six or seven years trusted entirely to the spiders to protect all empty combs up until time to put on the surplus boxes, and all not in use are left right outdoors the season through in care of the spiders.

The seasons of 1917 and 1918 were failures and I had about 75 hive-bodies full of combs outside, summer and winter, and I have not lost even one brood-comb or extracting-comb while piled out in this way.

I let them have a good freezing and put them out early enough to be sure the spiders beat the moths to them.

They are piled six or seven high with a tight bottom-board and cover, then ''staggered'' in two places, leaving about an inch opening at the front and back as a convenient entrance for the spiders. Later this makes a handy opening for the moth, and I am sure that in every instance she will be ''meat'' for the spiders.

I have a few times piled up extracting-combs in this way after harvest and have not yet lost a single comb, leaving 90 bodies out last fall, and a long hot fall at that. They were left entirely uncovered, were soon well stocked with spiders and not a comb was damaged.

Combs set out this way after extracting, I watch closely to make sure the spiders beat the moths to them, as I have not tried the plan long enough to feel perfectly safe.

If combs were piled out this way and left spider-tight, I am sure they would be ruined, as the moth would lay eggs in the cracks of the hives and the worms would crawl in.

I don't know whether the moth lays eggs in these cracks when the hive-bodies are staggered to leave openings; but if they do, then the spiders will catch worms as well as moths, for not a worm ever gets in. I have always believed that when the moth found such an easy entrance she used it in preference to a crack, and met a hearty reception from a spider.

Audubon, Iowa. E. M. Cole.

[This plan for protection against damage by larvae of the wax moth has been suggested from time to time, having been advocated by Langstroth many years ago. Those who try out the plan should keep close watch to be sure that the moths do not get a start, for if there are not enough spiders present there would be great danger of the moth larvae making quick work of the destruction of the combs. It is well to remember, in this connection, that moths are less destructive if the combs are spaced wide apart in the hive-bodies and exposed to the light, for the moth larvae prefer darkness. —Editor.]

* * *

ONLY THE NET WEIGHT WILL DO

Officials Object to Marking Minimum Weight Lower than Actual Weight

Our good friend Crane writes in January Gleanings of marking the actual net weight in ounces upon each section, whereas he holds that the U. S. law is satisfied with the minimum weight idea. Mr. Crane's arguments are based upon common sense and justice; but it is easier first to say, "not less than 12 oz.," or "minimum weight 12 oz.," than to mark 12, 13, 14, or 15 oz. on each, as the case might be. We thought so at any rate and followed the practice for a season, when we were taken to task by the departments of weights and measures of Massachusetts and New York for violation of the established laws. We were told that no such thing as "*minimum weight*" or "*not less than*" would do. In fact, nothing would do but the actual net weight, allowing a leeway both ways. In other words, a section weighing 12½ oz. might be marked 12 oz. or 13 oz. (Our practice is to mark it 12 oz.) A section weighing 12¾ oz. might be marked 13 oz., etc. We were not prosecuted or fined on account of our violating the law, but we have been careful that we did not get caught again.

It is not a great hardship thus to mark the sections; we found we did not have to weigh each one; for after a little practice we were able to tell by the feeling in which class a section belonged; and to guard against possible mistakes we would occasionally place one upon the little postal scales standing on the worktable by our side. This requires but a moment's time. This grading according to the weight is being done while we are cleaning our sections from propolis; then we are ready to arrange them in our shipping cases or carton them first, if that is to be done.

The shipping cases are marked only with the kind of honey they contain, clover, buckwheat, or what not, and the number of ounces each box therein weighs—thus, clover, 12 oz.; or buckwheat, 14 oz.; amber, 15 oz., etc. We have abstained from using the word fancy or No. 1 or No. 2. When a case is marked 15 or 16 oz. it might be supposed that that was fancy; whereas, if 10 oz. appeared thereon, that was equal to a No. 2 or worse. This course has been satisfactory to us and the purchasers.

If sections are to be cartoned, each section should either first be marked with the number of ounces and with the initials or name of the producer before it goes into the carton, or else the carton should be sealed and the weight stamped on the carton.

Naples, N. Y. F. Greiner.

* * *

TREATMENT OR DESTRUCTION

American Foul Brood Can be Eliminated from the Apiary by Careful Treatment

I should appreciate your making a slight correction to the article entitled "Comb Lovers and Fire Worshippers," published in the June issue, pages 379-380. Mr. McMurry in writing the article was depending on memory in his statement that "we have not a single case on record where a beekeeper, even the best of them, has been able to eliminate American foul brood from his yard by the shaking method." While the point Mr. McMurry wishes to make is correct, that the results from destruction were more satisfactory than those of treatment, the statement itself gives a wrong impression. In fact, we have 27 cases on record in the office in which in four counties during the past three years, beekeepers have succeeded in eliminating American foul brood completely from their yards by treating the bees instead of destroying them. It is unquestionably possible to clean up disease in this way. The fact that it is not done oftener is due to the economical tendencies of certain beekeepers, revealed in the fact that they apply treatment instead of destroying their colonies. The difference is in the state of mind rather than in the impossibility of success by using the ordinary methods of treatment. We have found that, whenever a beekeeper undertakes to eliminate American foul brood but tries to save the maximum possible amount of equipment and bees, he is sure to save something which is infected. For this reason the percentage of successful cures is less than when the beekeeper approaches the problem from the standpoint of eliminating every possible or conceivable source of infection.

Madison, Wis. S. B. Fracker.

SIFTINGS

J. E. Crane

THE first item in the index of the July number of Gleanings is "Honey Markets," in which we are all interested. The markets, of course, at this season are dull; but what especially interested me was that the honey producers in a large majority of cases report a honey flow and a crop of 100 per cent or over, compared with average years. There is something exhilarating in the thought that beekeepers, as a rule, are going to be well repaid for their labor.

* * *

Grace Allen says on page 452 that it pays to clip queens. She is right, as a rule; but, under some circumstances, bees can be cared for with little difficulty without this little ceremony, though we prefer clipping.

* * *

That certainly is a wonderful story on page 435, by E. R. Root, of a single colony of bees giving 550 sections of comb honey. It shows what is possible; and while most of us will fall far short of securing such results, it shows the path by which we may achieve the greatest success.

* * *

The method of making new colonies at the close of the clover season, as described in an editorial on page 433, is all right if you have combs and young queens and a late flow of honey; but, if you lack these essentials, beware. I tried it once, using queen-cells and virgins for queens. It did not prove altogether a success.

* * *

That robber cloth, described by S. E. Miller on page 447, is one of those little articles of great value while handling bees, especially in early spring or late summer or whenever bees are inclined to rob. These cloths are so simply and cheaply made that anyone capable of keeping bees can make them.

* * *

That is a right good article on "Migratory Beekeeping," by M. C. Richter, commencing on page 436. While we here in the East have little occasion for this method of beekeeping, there are some things to learn from those who practice it. Among other things he says, "A journey always seems to stimulate the bees to greater field activity. I was told when I first began keeping bees that moving bees from one place or town to another would increase their productiveness. I wonder how much there is in it.

* * *

E. W. Powell illustrates on page 448 a method of preventing a thin top-bar from sagging. I began using ⅜-inch top bars, but found them to sag badly, and of late have made ⅞-inch bars. As I handle these frames over, the question comes to me again and again, why take up so much of the best space in the hive, space that is easily kept warm for the rearing of brood or storage of honey, space enough to rear several thousand worker bees? It seems to me that one of the advantages of the wood-base foundation is a thin top-bar that would not sag.

* * *

On page 464 Mr. Demuth describes how to tell when the honey flow is closing, one of the most important things for an extensive beekeeper to know, and yet often one of the most difficult things to foretell. If we misjudge and set the time too soon, we may lose considerable honey for lack of room in which to store it. If we set the time too far ahead, we may find ourselves with hundreds or even thousands of unfinished sections too light to sell. These must be extracted, the best sorted out and saved for next year, while many will be so glued up and soiled that we prefer to throw them out and buy new ones for next year.

* * *

We have been told many times that all signs fail in a dry time, and it appears to be true. It may look ever so much like rain, but the clouds break and pass with little or no rain. It is just as true that all signs fail in a wet time. The clouds may break, the wind change, the sky clear; but before we are aware, the clouds gather again and it pours. We have had here in Vermont more than three times the normal precipitation—in fact, nearly 10 inches of rain in the month of June, more than is recorded for any one month in the last 100 years. What is true of the weather is true of the bees or the "control of swarming." Rules that usually work in a very satisfactory way are of little value in other years and under other circumstances. The present year is such that we cannot depend on rules that work well in ordinary seasons. We have been accustomed to feel that swarming is over when we have shaken the bees on to dry combs; but this year many colonies will quickly fill such hives with brood and honey, start queen-cells and are ready to swarm again. Again, we may remove an old queen, cut out queen-cells and introduce a virgin queen, and, as soon as she is laying, we expect swarming is over. But this year a young queen will, in many cases, fill all available room with brood, and queen-cells are started and again there is swarming. So we find it necessary to clip their wings to keep them at home. Well! It is a swarming year, and often necessary to repeat repressive measures to keep our bees on their job.

Our "Little Gray Home in the West."

CONSTANCE ROOT BOYDEN
(Stancy Puerden)

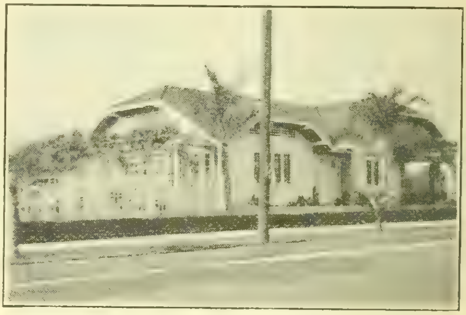
WHEN I have permitted myself to think of the approach of old age I have always dreaded it as a time of life which, though peaceful, would probably be devoid of thrills. If that is true, then I am still young in spite of a dozen gray hairs and the record in the family Bible. For few thrills have surpassed the one which came to me when the head of the family displayed the keys to our new home and said the former owners had at last departed and left us in possession. And unlike most thrills this one persisted and even grew when we unlocked the front door and went on an unconducted tour of exploration through living room, dining room, kitchen, screen porch, hall, three bedrooms, six ample clothes closets, cleaner closet, linen closet, large un-Californian attic and nice little basement, not forgetting the two shady porches and entrance terrace. And we positively gloated over the fruit trees, an apricot, a nectarine, a peach, half a dozen orange trees, 12 grapevines and 80 blossoming rose bushes. Having left plenty of fruit, flowers and shade in our old home we did not want to wait years for the same comforts in our new one.

Laugh at us, if you like, you people to whom a change of residence is a common, if uncomfortable, incident, but remember we have had just one home in our married life of 24 years, and we had it all that time, and giving it up was a most painful operation with no anaesthetic. We thought we had always appreciated the word ''home,'' but being homeless for five months made us feel it to be the most beautiful and comprehensive word in the English language.

In these days, when we see instead of read much of our news in the pictorial section of newspapers and magazines and at motion pictures, an article seems uninteresting and old-fashioned when it is not illustrated. For that reason I am showing a couple of snap shots of our ''Little Gray Home in the West.'' (The song of that name has long been a favorite with the head of the family, and it is a curious coincidence that when our choice narrowed down to four or five houses they all happened to be gray, although we had not considered them for that reason.) This is a very pale gray, just off white, with white trim and green shingles and shutters. One picture shows the front, facing east, and a part of the side including the little pergola which extends south from the front porch. The other shows a view from the southwest including the rose garden, behind the white fence, and the lattice enclosed pergola which covers the porch at the west of the house. That is where my Corona and I are writing this, and since the picture was taken the grapevines have grown so luxuriantly that the porch is shady practically all day.

When we were househunting, real estate agents and others told us porches were little used in this climate, that they were apt to be too warm during the day and altogether too cool for comfort in the evening, both of which statements have proved to be erroneous in the case of the fresh air loving Boydens. It is true that the interior of the house is rather more comfortable in the early afternoon, on very warm days; but during the mornings, late afternoons and many evenings the porches have been delightful. We have already eaten Sunday evening lunch on the porch under the grapevines, and although it was dark enough to need the lights we did not find it too cool.

Another comfort with which we would be most unwilling to part is the 30-inch overhang to the roof. Keeping the direct rays of the sun from the glass of the windows during the middle of the day insures a much cooler house, for the summer sun is undeniably hot in California. In the winter when the rays of the sun are needed for warmth and cheer they will strike the south windows owing to the lower position of the sun in the sky. All of the west windows are shaded by the grapevines in the summer, but when the leaves fall in the winter those windows too will be ''sunkissed.''



OUR living room, a little over 14 feet by 23 has four French doors opening on to the porch at the end, four casement windows, a wide solid front door flanked by sidelights which are screened and will open, on the east side and casement windows above the bookcases on either side of the fireplace to the north. While this insures an abundance of light and air it does not leave much wall space for pictures, but we find the changing views through the windows more to our taste than any pictures we could buy. I wish I could show you one of my favorites through a north window. A rose bush, climbing up outside, festoons itself over the top of the window and when the casement is opened the blossoms peep in; beyond there is a vista through a long, green aisle of the orange grove with just a glimpse of a pretty home at the other end, and in the distance on clear days a view of the blue mountains.

After showing you that view I would like to have you turn and look at a brown basket of roses on my little brown sewing table by another window. There are creamy buds with hearts of gold, tawny buds deepening to a reddish copper at the heart, blossoms of a flaming salmon rose color, blood-red roses and large single roses with petals of apricot pink shading to buff at the center and set off by glossy foliage tipped with autumn red. And the roses are as beautiful and varied in shape as in color, with petals of exquisite texture. It is remarkable that the rose bushes, after their extravagance of bloom all the spring, should have enough vitality left to furnish these beauties in July.

THIS first California summer is teaching us many things about irrigation. We are learning that velvety green lawns, roses and other flowers, fruit trees and even palms must be irrigated regularly and thoroughly. We inherited a Japanese gardener from the former owner of the place, who explained that it would be much easier to hang on to him than to coax him back if we let him go, and being ignorant of conditions here we decided it might be cheaper in the end to keep him for a month or two. He is supposed to take care of our place along with a number of others and to work when and how he pleases. We were quite puzzled to discover that at times he looked like a boy of twenty who came to his work on a bicycle, and again he seemed to be a middle-aged man who arrived in a Ford bringing several fancy sorts of lawn mowers and other tools. We figured it out that the younger man sublet part of the work to the older one, and about that time a third appeared and we think a fourth has worked here. We finally decided that an oriental syndicate is taking care of our little place.

The lawn is watered by an automatic sprinkler system. Our first Sunday morning I was awakened before five by a sound as if a hose had started into sudden activity, and by the time I had regained all my senses my clothing on a chair near a window was sprinkled plenty damp enough to iron, my white shoes were slowly filling and water was dripping from the window sills and running down the wall paper to the hardwood floors. When the man of the house was persuaded to investigate, one of the syndicate affably waved a greeting and resumed his occupation of sitting on the brick terrace and meditating while the automatic sprinklers efficiently irrigated. Since then, some two or three times a week, when I hear the sound of artificial rain about daylight I leap out of bed and close our four windows to the south and then go on and close windows in the other bedrooms, for I doubt if the rest of the family would waken if they were half drowned. Fortunately the porch to the west shelters the four French doors on that side of our bedroom, so we do not have to finish the night without air, but the porch furniture received its share of irrigation. Whether the Nippon gentlemen love to rise at dawn or are taking advantage of the time when the water pressure is strongest we do not know, nor are we likely to ascertain from them, for apparently they do not understand English. We have been told they wilfully misunderstand in order to have their own way. We Boydens do not know anything about the Japanese question. We only know that the results of the syndicate's work on our place are good, but whether we can afford to continue such help we shall know better after writing checks for the water bills.

But it is a keen joy to a garden lover to see things grow in this irrigated, sunblessed country. The former owner of our place evidently did not care to grow vegetables, for the nearest approach to a vegetable was a tiny mint bed around a hydrant. One of my first acts was to set out a few tomato plants, and how they have grown, although I have had to irrigate them myself, for the syndicate does not include them when it digs nice little trenches around the roses and other flowers and turns water into them. A little parsley bed will be started next, and then, if I can persuade the syndicate or an American gentleman related to myself to spade up a little piece of idle ground, there will be Swiss chard and string beans. In this delightful, mellow soil of the San Gabrial valley I believe I could use a spading fork myself, but it might establish a bad precedent. Next year we hope to start rhubarb and asparagus, and a strawberry bed will displace some of the syndicate's chrysanthemums and cosmos.

Beekeeping as a Side Line

Grace Allen

DO people today, sideline beekeepers, for instance, keep diaries and "journals"? Last winter, while reading the "Life and Letters" of George Eliot, I was constantly amazed at the journal she kept. The entries which appeared in the book ranged from long detailed accounts of their travels on the continent, the things they saw and the people they met, to the briefest of single memoranda, such as "Wrote the last word of 'Adam Bede' and sent to Mr. Langford. *Jubilate.*"—or "Declined the American proposition, which was to write a story of twelve parts in the New York Century for £1200."

This particular sideline beekeeper does not keep any journal. If she had done so in the early summer of this year, she might one evening, in verbose mood, have written something to this effect.

This was the day Mrs. S. was to take lunch with me. She understands from past experience that lunch with me means a very simple affair, as I cannot, if the mornings are to be spent as planned, spend much time preparing dainty fixin's. Why should women do so much of that, anyhow? Do we prove the friendliness of our spirits, or their worthwhileness, by the variety or rareness of our menus? Yesterday, when in town, I bought—yes, bought—some chicken salad; this morning I made a mayonnaise dressing and a simple quick little sour cream cake; prepared the lettuce and the strawberries, telephoned my nice friendly neighbor for some whipping cream; and dusted up my house. I was to meet Mrs. S. at the Park Station and drive her over. It had been my intention to have the little blue and gray table in the breakfast room all set before I left, but somehow other things made me too late—driving into town with A. A., running over to the beeyard, catching a lost baby rabbit and giving him to the little boy cherry pickers—such things, you know. However, everything was crisply ready in the icebox, and it would take only a few minutes to set it out.

Just as I was about to hurry into company clothes to go whirling over to the station, the telephone rang. Over the wire came the pleasant even tones of a beloved friend living about a mile away. Now these dear friends had one hive of bees sitting in their orchard, a hive left quite to its own devices. And this morning this sweet voice was telling me that the bees were swarming; they had no hive and didn't know what to do—could I come over and help? "I can't," I regretted, "Mrs. S. is coming to lunch and I ought to be on the way to the station this minute." After hanging up, I reconsidered and called back. "If you'll have someone head off Mrs. S., so she won't walk all the way over here in the hot sun, I'll run to the yard and get a hive and go on over in my house dress and hive your swarm before lunch." So over to the yard I dashed in the faithful Ford, assembled a hive and dashed back, past the little brown bungalow, over to Granny White Pike. There sat Mrs. M., lying in wait for Mrs. S. Together we sped over to the station where the patient lunch guest still waited. We explained as we went, and soon were driving in through the beautiful grassy wooded acres that make the approach to Mrs. M.'s lovely home—and on around the house to the orchard.

And there hung two swarms!—one medium-sized one hanging like a convenient brown pear from an apple tree, and one large long one strung out most inconveniently along a thick large limb of a peach tree. I tackled that one first, it was so much larger and more important; but it was troublesome, as such swarms are. Two negro men leaned on their hoes in the garden, two colored women watched through screened windows. Mrs. M. and Mrs. S. stood to one side, loyally offering to help, while Jock, the Airedale pup, waited in the car. Someone brought a ladder, someone found a basket. After much climbing up and down, much shaking and brushing and waiting and perspiring, I got most of the bees in the basket and dumped them down in front of the hive. "There," I said, "that's one."

Then I went to the apple tree. This one will be easy, I told myself. One quick jerk landed them in the basket; from which, however, they instantly rose, and then flew over to the other tree and began draping themselves along that same may-I-say-pesky-branch that had so recently been the scene of my struggle with the first swarm! Waiting again till they were well clustered—if you can call that sort of thing a cluster—I repeated previous maneuvres, and after much brushing got them. And then—*spilled them*! From the top of the ladder to the ground! Basket and all, crash! Sheer awkwardness, that, hot and hurried awkwardness. At that moment Mrs. M.'s fine and friendly voice came floating across to my dripping dismay, where I sat on the ground and laughed. "Lunch is all ready," she said; "you are both my guests." And in we actually went, my silk-clad guest and I in my blue gingham, and ate lunch with Mrs. M. in her large cool dining room.

After lunch, the appletree-peachtree-spilled-out swarm being again strung out along the stout peach branch, I again scaled the ladder. At the first touch, they took to wing and were off over the barn lot to no one knows where. Can you blame them? The children, home from school by that time, went running off after them, but they soon lost sight of them and of course will never see them again.

"Well, we have one of them," comforted Mrs. M., and she took us out to see her flower garden. There, a little later, I heard bees. And hurrying to the orchard fence, discovered the hived swarm calmly leaving their new home and actually going over into the old one, the parent hive! It sounds incredible, but it happened. We all saw it. And I took my beehive and my company and went home.

Yes, assuredly I would have written this into my journal last May, if I'd had one. For while the countless times that one hives swarms successfully and without incident, all according to Hoyle, are interesting to experience, yet it is these other times when everything goes witchy, that are so funny to remember.

There really are two sequels to this tale. One could not have been written into the diary until a few days later. For then Mrs. M. telephoned that the bees had swarmed again and Mrs. M. was coming after the hive, while the eleven-year-old boy was trying to get the bees. She described the cluster, we decided on sawing off the branch, and he hived them successfully. You're a better man than I was, William M.

Bees, flowers, vegetables and chickens make a combination which broadens the interest of the owner, adds to his health, to the variety of his table and to his bank account.

The other sequel was what Mrs. S. and I did the rest of the day. When we finally reached home, instead of going in, we walked back along the elderberry bushes; climbed the old rail fence where wild roses were just passing out of bloom; crossed patches of pink stonecrop, resting a moment on flat rocks in the thick of it to count the bees on the blossoms; picked our way on stepping-stones over the little wet weather branch; climbed the rock wall; and made our way up the gentle ridge to the dead finger-pointing oak that marks our rear boundary. It was after climbing the wall that we heard bees. "They are working on something here," I said; "let's see what." We started looking. We looked; and we looked; and we looked. Over here, we decided; no, over here, we reversed the decision; or no, it sounds loudest down there. Strong and steady was the humming; but for all our searching, we found no bees. So we gave it up and gathered daisies instead. Then we sat down on the warm sparse grass, with Jock at our feet, and talked about life.

One day, some two or three weeks later, I heard Mr. Allen call to me, from down by the rail fence. "Come on out here," he urged; "and bring my hat." When I joined him, what was he doing but trying to locate humming bees! With Jock at his heels and a quart of cherries—or what was left of them—in his hand! He had first heard the sound, he said, when up near the house, and had wandered down to locate it. But he had not been able to find anything. So we tried it together. But with no better results than on that other day when I lunched my lunch guest at my neighbor's. It is still the mystery of our little ridge.

How happily sideline beekeeping combines with other outdoor home activities. People who live "half in the country, half in the town," and who therefore have plenty of yard space, are the ones who oftenest find a few hives of bees an attractive, interesting and perhaps profitable addition to the home grounds. How well they combine with both vegetable and flower gardens. How charmingly flowers and shrubs, smooth green grass and young trees harmonize with well-kept white painted beehives. While the homey look of a flock of fine chickens is made even homier and more alluring by half a dozen or more beehives by the fence. For quite without question, the hives add to the artistry of the owner's surroundings, as well as to the broadening of his interests; to his health as well as to the variety of his table; and perhaps even to his bank account. Yet to the real bee lover that last item is usually a matter of minor importance. Even as he does not ask his tramps through woods to bring him pocket money, nor his tennis or golf to make him a bondholder, so, of his bees, their true lover asks first, and chiefly, for the charm and beauty of their setting and the delight and wonder of their ways.

THE SILENCES.

The silences came creeping near
My penny-trumpet day,
And I stood very still to hear
Whatever they might say.

The things they said were holy things,
And when they slipped away,
A tented wonder, like great wings,
Was all about my day.

FROM NORTH, EAST, WEST AND SOUTH

In Southern California.—The honey of southern California is nearly enough gathered so that one can judge pretty well as to the size of the crop. The orange was a short crop, as only a few sections produced enough orange honey to pay to leave the bees near the groves. The black sage was yielding at the same time, so a number of beekeepers moved their bees, either just before or during the blooming period, from the orange to the sage ranges. The sages have yielded very well. The buckwheat is doing nicely and will give a good surplus. All in all, it is a far better crop than 1921, but will scarcely come up to the record crop of 1920.

We might cite an unusual case, showing the great value of knowing the business and having your bees up and ready for the honey flow. Two apiaries were located on an orange range, so near to each other that it was almost possible to throw a stone from the one to the other. One apiary produced 40 pounds per colony, while the other produced 160 pounds per colony. It seems to be more necessary to have the bees in good condition for an early and rapid flow such as the orange produces, but may well be heeded in any honey district.

Many beekeepers have been adding modern appliances to their equipment the last few years. One of these is a pressure tank, to assist the feed of gasoline in the stoves so much used in the heating of knives and in the capping-melters used throughout southern California and the West. Some use the common plumber's pressure tank that he uses in connection with his fire pot. Others have one made that holds one or two gallons of gasoline. Many have no means of registering the amount of pressure put in them. An ordinary way is to have a valve stem from an automobile tire soldered in and the pressure put in by an ordinary tire pump. While using one of these appliances in their extracting-house near Perris recently, Messrs. Rough and Hardy had the misfortune to have their tank explode. The explosion was evidently caused by the flow of gasoline being retarded by some obstruction, so that the stove was not burning satisfactorily. Mr. Rough was pumping more air in at the time of the explosion and must have had too high a pressure. Gasoline was thrown over both of the men, and the outfit took fire. The extracting-wagon and a latest model eight-frame extractor, together with the balance of their equipment and a number of colonies of bees, were entirely destroyed. Mr. Rough was so severely burned that he died a few days later, and Mr. Hardy is just out after two weeks spent in the hospital. If beekeepers want to use this appliance, it seems but reasonable that they should have a way of ascertaining how much pressure there is in the tank. We have found that a very satisfactory way is to add one, two or more feet to the height of the gasoline tank on the stove.

"Beekeeping next to nature" might describe the equipment of a Palo Verde apiarist, whom we met a few days ago. His story reads like this: "I need a man with some capital to help me develop a good business, where we can run from 800 to 1000 colonies. Many of my hives are sitting on the ground, with no bottom-board and a gunny sack laid over for a cover. I have no money to buy equipment and cannot develop my business as it should be." When a man can run bees without a bottom-board or cover, he is certainly to be congratulated, so far as economy is concerned at least. But this is a great country and, if you tell a man a thing cannot be done, some Yankee will come along and do it.

Prices do not seem to be established with any degree of regularity. Most beekeepers are hoping to get an average price of not less than 10 cents per pound. In fact, the cost of production is so great now that it will be necessary to get a good price if any profit is made.

Weather conditions have been all that the southern California beekeeper could ask for. Mild days, with nights not too cool, have prevailed up to the present time, with the exception of about 10 very warm days. However, these days were not hot enough to injure the honey plants to any extent.

Corona, Calif. L. L. Andrews.

* * *

In New York.—Frequent torrential rains with cool nights and warm days have been the weather conditions during June, with a very intermittent honey flow from clover. Where colonies were strong and supplied with drawn combs a very satisfactory crop has been stored; but, where bees have been operated for comb honey, much swarming and very little surplus honey has been the result, due to the cold nights preventing the comb builders from breaking into small clusters to build comb in section boxes and the rainy weather keeping the working force at home a great deal of time breeding discontent in the brood-chamber. Today (July 8) basswood is in full bloom and is yielding freely, although there is but little left in these parts.

Peas, oats, tomatoes, corn, etc., were damaged nearly 50% by the heavy rains, and many fields are being worked up and sown to buckwheat. Fall honey plants are in fine condition; as is also new clover seeding, which promises well for another season.

Brood-rearing has been heavy throughout the spring and summer. Many queens are now passing their height of prolificness, and requeening during August will be even more advisable this year than usual.

Ransomville, N. Y. H. M. Myers.

FROM NORTH, EAST, WEST AND SOUTH

In Ontario. Ontario has a great profusion of clover bloom this year—at least this is the case in all five counties where we have bees, and from what I can learn, I believe the conditions are much the same in that respect over much of the province. Heavy rains have thoroughly soaked the ground, and clover is lasting a longer period than usual. In our section, we have had only about one day out of three that bees could work owing to wet cool weather, but when the days are fine nectar comes in nicely. While I have had few reports from other places, a fair crop of honey is now assured at our three apiary centers, and the quality appears to be very fine. There is no buckwheat grown in Wentworth and Haldimand counties, and very little in north Simcoe where our bees are located, but here in the home section we have a very large acreage this year. In years past when clover failed, fields of buckwheat coming on looked fine to our eyes, but this season, with wet weather holding the clover season back and at the same time hustling the buckwheat on, things are different. It looks as though it will be almost impossible to get all of the clover honey off the hives before buckwheat comes on, as the two honey flows will overlap. However it is better, I suppose, to have some mixed buckwheat and clover honey than to have none of any kind, so we will not worry, but do the best we can and let some of the clover go as buckwheat.

Old honey seems to be all cleaned up, and, although we have made a few sales, the honey is about all on hives yet at this date (July 8). We have had quite a few inquiries in a wholesale way. Sugar is firming all the time, and is hard to get in quantities here at present, grocers tell me. That at least should help the honey market a little. Agricultural prospects are good all over the Dominion, and that, more than anything else, is a favorable factor in the matter of helping sales of honey, particularly so in the case of the western provinces where crop failures have been unpleasantly frequent during the past few years.

It is pleasing to all beekeepers, I believe, that steps have been taken by both the U. S. and Canadian authorities to prevent importations of live bees from Europe, owing to the danger of bringing over the Isle of Wight disease. Only a short time ago I had a letter from a beekeeper in England, who claimed that what we called paralysis here was nothing but Isle of Wight disease.

If that is the case (I do not think it is), we might feel safe in the thought that this disease, dreaded as it is in England, would never be a serious menace here, since the few isolated cases of paralysis (so-called) never have, so far, proven infectious nor contagious as far as I could see. Last year we had three distinct cases, and they were all over 80 miles from each other. Colonies actually died right out in two cases, and yet other colonies alongside were not affected. One colony in the home section got sick in buckwheat bloom and the bees were piled up in front of hive by thousands, very few getting over two feet from the hive entrance before dying. They exhibited the usual symptoms, shiny in appearance and bloated, their bodies being filled with a light-colored fluid.

Although these colonies were much decimated in numbers, they wintered well and early in spring appeared all right. A fine Italian queen headed the colony, and I was surprised to find the same old clipped queen present this spring. I thought they might have superseded her last fall. About May 1 they again got sick and, although I have requeened the colony, the adult bees are still dying in such numbers that the stench from their dead bodies is noticeable as one goes past the hive. I would give quite a little to know just what causes this malady.

Markham, Ont. J. L. Byer.

* * *

In Michigan.—August could well be the busiest month of the year. The white honey flow ceases in late July or early August and, as the dark honey flow follows very closely, the entire white crop must be immediately removed from the hives or its value will be reduced by dark honey being mixed with it

I have noticed when supers were piled high at this season, with cool damp nights, that fermentation starts in many supers, if not removed to the honey-house; and even there, they must not remain long, but should be extracted and sealed in tin cans or other tight containers within a short time.

The honey-selling season starts at this time. This is especially true of the comb honey, which must be cleaned, graded and cased and a part placed on the market.

The colonies are very strong now and must be given room, or a large proportion would swarm out.

This is an ideal time to make one's increase artificially, and every strong colony should make one. Here is the plan that I have used successfully for several seasons: Immediately after the white honey is taken off, a hive-body with ten combs is placed on each hive, and, just as the dark honey flow starts, the increase is made by setting off the super of combs on a bottom-board and closing the entrance to about three inches. Then after removing the old colony to a new location, place this newly made colony on the old stand and introduce a young laying queen at once.

The dividing of the colony and the introduction of the queen are best done just before dark; for, if the division is done early in the day or even in early afternoon, by nightfall there would be few bees left in many hives unless the cage containing the new queen to be introduced is placed among or above the combs. The queen may be introduced in any of the good ways, but I have had the best results when using the tobacco-smoke method, which is quickly done with no bad results. I have never killed a queen or worker by this method, and I believe it is perfectly harmless. I get from 90% to 100% safely introduced. I proceed as follows: I have a good fire in the smoker and then place in a good quantity of strong tobacco. With a good volume of smoke I give five or six puffs in the entrance, and in about one minute or so I release the queen at the entrance and follow her up with a puff of smoke. If introducing a number of queens, I smoke six or eight colonies and follow up immediately with the releasing of the queens.

It is well to remember that colonies will rob now, and that the entrances should be reduced except in very strong colonies.

If one gets the honey off and extracted or, if comb honey, cleaned and cased, the increase made and properly cared for, the sales of honey nicely started, and the old wornout queens and even many that did excellent work this year replaced with young vigorous ones, he will be busy enough.

The other fellow will compete with you for sales; but rather than cut below the established price, unless that price is held beyond its proportional value with other goods, prepare your product just a little more nicely and neatly and give just a little better service, and you will be both surprised and pleased with the final results.

East Jordan, Mich. Ira D. Bartlett.

* * *

In Texas. The month of June has brought much disappointment to the beekeepers. Cold periods, rains and floods have put an end to any hope for a honey crop in southwest Texas. The drought of last fall cut off hope of a horsemint flow. The rains ruined the huajilla and mesquite, and now the only hope for a honey crop in Texas is cotton. In some small isolated sections a fair crop from horsemint and marigold is reported. At the present time the bees are just making a living, and unless a very favorable fall bloom occurs wholesale feeding must be resorted to.

The summer meeting of the State Beekeepers' Association will be held during the Farmers' Short Course at College Station on July 25 and 26. The program will be very interesting, as many of the speakers are old as beekeepers in Texas but new as speakers before the association. Last year the auto caravan trip was started, and this year most of those attending will come with one of the many caravans headed toward College Station.

The migration of plants is a very interesting and little-understood subject. Just what conditions start it and bring it to an end are yet to be learned, but it is safe to say that very favorable weather conditions and the breaking up of the old plant growth due to farming activities are the main factors. Most beekeepers recall the migrations of the dog fennel, Canadian lettuce, Russian thistle and buffalo burs. Of particular interest to the Texas beekeepers is the migration of the Texas marigold (*Guillardia pulchella*). Less than 20 years ago this plant was noted as a honey plant in north Texas. Today it is the main plant that builds up the bees to a strength to care for the cotton flow. About five years ago this plant came into notice in southwest Texas, and this year it had increased in numbers. to where, despite the cold and rains, it gave some surplus.

It seems to be one of the provisions of nature, that the weather conditions favorable to one plant are not to another. Thus the plants do not come into competition, and bees do not starve. This spring when huajilla was blighted by the rain, guayacan (*Guiacum angustifolium*) gave a good surplus, and now, when everything else has failed, brazil (*Condalia oborata*) is furnishing a living for the bees.

It seems that everyone has something to say about catalepsy in queens. I hardly like to think of Her Royal Majesty having fits or stumping her toes, and believe this peculiar action is related to the "death faint" or playing possum which is very common throughout the whole insect world.

San Antonio, Tex. H. B. Parks.

* * *

In Pennsylvania.— Slow honey flow, lots of swarms and little surplus honey make up most of the reports from Pennsylvania beekeepers so far. This condition is found in all of the demonstration meetings in various parts of the state. The average surplus of white honey to date is not over 10 pounds per colony. Two frosts in June in the mountainous districts and alternate cold and warm spells all over the state have interfered seriously with nectar secretion. In spite of these conditions we find an occasional beekeeper with a small but satisfactory surplus. Management, or lack of management, more than the season is the greatest factor after all.

The great factors in honey production are in turn the factors that prevent the bad conditions so prevalent at present. In our extension work we are teaching frequent requeening, more food for winter and spring, more brood rearing room, especially for spring, and more hive insulation than is usually given. The beekeeper who gives each colony a young Italian queen about August 1, provides 50 or 60 pounds of honey, insulates his hives well and has 10 to 14 combs for brood-rearing through April and May, is always ready for a bumper crop in the good season and will harvest a fair crop in the poorest season. Those who practice this system are harvesting a fair honey crop even this year.

Matters of greatest interest throughout the state seem to be American foul brood and transferring bees from box hives into modern hives. Control of the former depends much upon the general practice of the latter in many sections. Many of our demonstrations are on these subjects. The method mostly used is to drive the bees up into a modern hive equipped with full sheets of foundation and a queen-excluder placed between the two for a period of 21 days.

American foul brood is often found in bee-trees, and thousand of colonies live in the woods of this state. Some have raised the question regarding the advisability of transferring the farmers' bees in order to control American foul brood when so much of it exists in the woods. This is a serious question and can only be met in one way. The farmer beekeeper must practice such methods as to prevent the wholesale loss of swarms going to the woods every year. If no swarms escaped, in a very few years almost all of the bees in the woods would be dead. The remaining bee-trees could be cut down by beekeepers in the vicinity.

This fact must be emphasized, the average beekeeper must positively change his methods or rapidly lose out. Most of the bees in the state are kept by farmers or other side liners. Geo. H. Rea.

State College, Pa.

* * *

In Northwestern Indiana.—Apparently there will be about an average crop of honey in northwestern Indiana. Plenty of rain up to May 24 gave the clover a good start, but since that time there has been no rainfall except a few local showers. Two weeks ago it appeared that the clover crop would be cut short owing to drought; but basswood has helped out, and this, with the heavy flow from fruit bloom in May, will give us about the average for this time of year. In the vicinity of the Kankakee and Calumet rivers, half or more of the surplus is usually secured in August and September, heartsease and goldenrod being the predominant sources.

Prices probably will be low, owing to large crops reported elsewhere and to the enormous yield of berries and other fruits. Unless producers can co-operate in securing effective organization for marketing, involving a better scheme of advertising, it would seem that many will be obliged to reduce output or to discontinue production.

Valparaiso, Ind. E. S. Miller.

* * *

In Wisconsin.—From willow bloom in the spring right through to the clover flow the weather was favorable and the bees were stimulated from natural sources. Breeding was continuous without any interruption. In our 20-frame hives the colonies became very strong. The clover flow came fine on June 5, and with it came a flood of rain that caused much property damage. From then on during June up to July 5 the honey flow was all cut to pieces by all extremes of weather, there being a day or two at a time for bees to work and several days of weather that would keep the bees at home.

By the end of June swarming was in order, even with our large hives. Up to the present time (July 5) 12% of all colonies swarmed. Less than 4% were natural prime swarms; that is, they swarmed when the first cells were sealed. A few colonies showed plainly that they were supersedure swarms with virgin queens. Six per cent were swarms where the swarm came out with the old queen, and several cells were in the hive with young queens just ready to emerge. Many times the queens would emerge while we were removing the cells from the combs. We think most of these may also be classed as supersedure swarms. But there were some that were a puzzle, judging from all the evidence. We think that the keeping of the bees at home and idle half of the time caused a crowded condition in the brood-chamber, even with plenty of super-room. The bees decided to swarm (?), but kept right on working when the weather was better later, and seemingly forgot about the cells until it was too late to destroy them; then, when the cells were ripe, they just had to do something and swarmed at the last minute before the young queens emerged.

With seven years' use of the large hive, we have found that many colonies will start queen-cells, and later destroy them of their own accord if the weather is good with a good honey flow on. This year the unfavorable weather all came in with the honey flow. Eighty per cent of our queens were two years old this season. It was practically impossible to do much requeening last year in August, on account of the drouth at that time. Robber bees are respected by us, and at the same time we might say there is nothing we dislike so much in our business as a robber bee.

We find it unnatural and unwise to try to do any requeening in August in our location, with nothing for the bees to work on. We do this much, though a little at a time—we

FROM NORTH, EAST, WEST AND SOUTH

make nuclei during the honey flow and give them cells that were grafted from larvae of our best colonies. When these young queens are laying we introduce them with cages to such colonies as most need the replacing of old and poor queens. We do no more of this than we can and get away with it without starting robbing.

Our policy now is, ''Never kill a queen, when there is no honey flow, unless you can replace her with a laying queen at once.'' The robbing spirit may be kept down with the policy that an ounce of prevention is worth a pound of cure. We think American foul brood is spread more in this way than in any other way. With us the month of August is mostly occupied with extracting honey and a little requeening.

Greenville, Wis. Edw. Hassinger, Jr.

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In Georgia.—This season has been rather peculiar in that local conditions in this immediate region varied so greatly in localities not far apart and similar in general conditions. The honey crop seems to have been pretty good over a large part of the Coastal Plain region, but in some places it was too dry and in others too wet at a critical time in the honey flow. In some localities of this nature, a too rapid change from dry to very wet, and again to dry weather, was not conducive to a very good yield of honey. In this locality, the earliest honey plants did not yield the bees quite enough for breeding purposes; but, as they generally had abundant stores from last year, they were ready for the main honey flow from tupelo gum and gallberry, which came into bloom at nearly the same time and yielded fairly well for about a month. Those were followed by the bloom of summer titi and saw palmetto and large fields of cantaloupes, which were yielding a moderate surplus until a very wet spell of weather suddenly set in when, for some weeks, the bees drew heavily on their stores until the weather became settled again. They are now doing fairly well on cotton and a weed, lately introduced, called ''Mexican clover,'' or ''Florida Purslane,'' which resembles neither a clover nor purslane but is botanically known as *Richardia scabra*. This plant is spreading rapidly in this region and yields a light colored honey of good quality, rather superior to cotton or velvet-brown honey. The nectar from the latter is due to be coming in soon, and more of it than that from any other late summer plant. If weather conditions were always favorable there would be practically a continuous flow of honey in this region from about March 15 until November. If the people could see the folly of so much burning of vegetable matter in woods and fields, thus impoverishing the soil as well as destroying much valuable bee pasturage, both the agricultural and apicultural interests of this section would be enhanced.

The honey produced in this immediate section is generally sold in a retail and jobbing way and, being of good quality, sells rapidly enough so that the crop is disposed of some time before the new crop comes in. Consequently the market is never badly glutted and prices remain quite firm in normal times. T. W. Livingston.

Norman Park, Ga.

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In Porto Rico.—The coffee plant or shrub plays a very important part in the honey yields of Porto Rico. Not that coffee in itself yields heavily; but, being a rather delicate shrub, it cannot withstand the direct rays of the sun, which are broken by the large trees grown for shade. These trees are all leguminous, and are heavy yielders of nectar, given the blossoms and proper weather conditions.

The northern beekeeper located here frequently runs into the old canard of bees injuring fruit or, to localize it, coffee. I have talked with natives who make the claim that the bees are destroying the coffee industry of the Island. One would think the educated classes would know better, but they do not appear to. Coffee-growers themselves, as a class, claim that the bee in gathering the nectar from the blossoms injures the flower so that no fruit is produced.

An article two columns long published lately in one of the leading papers of the Island, the ''El Mundo,'' has a vicious attack on the honeybee along these lines. The writer claims that not only the blossoms are ruined by the bees but that all pollen is stolen by them. This prevents the blossoms from being fertilized, and further that in stealing the nectar from the blossoms the setting seed is robbed of this nectar (food) which it needs for the first few days of its existence.

I am sure the scientific world would take note of the unusual ideas of the writer of this article, who is too modest to put his name to the end of it. No doubt we should all like to have some idea of the foundation he has for his rather original view-point on the needs of the coffee berry.

From all I can glean in reading on fertilization, the flowers which need the insects for pollenization are those which yield nectar, whose pollen is sticky or viscid and whose blossoms are more or less brilliant. All this applies to the coffee blossom, which is a pretty star-like flower, white in color and an inch or more across.

The Island has been receiving a fair rainfall, which should stimulate the production of blossoms in the near future. Also it has been unusually warm for this time of year.

FROM NORTH, EAST, WEST AND SOUTH

The south coast is bone-dry. Cattle are starving, and all the grass has been burnt up by the extremely dry weather there.

There is a little honey being gathered in the hill districts. Coffee has been blooming, and this is stimulating to the colonies. Never in my experience of the Island have I seen the hives so bare of honey up to June first as they have been this year.

Aibonito, Porto Rico. Penn G. Snyder.

* * *

In Iowa. Up to this date (July 3) the flow has been up to normal in this locality. In fact one might say above normal if we get rain soon. The fields are in many instances white with clover yet, but the stems are getting short, though yielding lots of honey to this date. However, unless we get a shower within the next few days it will soon be dropping off. It has held its own exceptionally well on account of the ground having an abundance of moisture prior to the flow. Many of the colonies have filled three full-depth bodies and are still bringing it in.

Swarming has not been so hard to control this season as at other times with the same flow. Our queens have had the run of two hive-bodies all spring until June 15, when we commenced putting them below the excluder, and with the exception of a few 1921 queens that were crowded for room to lay, and some colonies that were superseding, we should have but few swarms. These old queens should have gone out of the yard last season, but on account of the poor flow we let them go and so did the bees; consequently we had some failing queens. These old queens are the cause of many swarms. The moral is, requeen all colonies having queens that are liable to fail next spring.

Dr. Miller always left that part to the bees, and considered that they attended to it at the proper time, but our bees do not always do it when it should be done. From our own experience, a queen of this year's rearing, going through two good honey flows having the use of two bodies, will be a failing queen the next season unless she is an exceptional queen. These old queens are a loss to any beekeeper, and while I have always held that any up-to-date beekeeper should be able to rear a few queens, if they can't do it, it is money well invested to buy queens and requeen all colonies that have queens that are liable to fail next spring. The colony requeened will make enough more honey to pay for several queens.

I said every beekeeper should be able to rear a few queens. This does not mean that you should not buy some good queens from some reliable queen-breeder. Nearly every year we introduce some new blood in order to keep some pure stock. But if one is to breed up a strain of honey-getters, they must breed from queens that "bring home the bacon." An observing apiarist knows full well the colonies that have produced the most honey. They have noticed the colonies that are bad-tempered; the ones that cap their honey white; the bad waxers; the hustlers; and the ones that had rather swarm than make honey. These points are under the apiarist's observation and he can pick one or several breeders from his own yard (we are supposing you have Italian stock) that in all probability will outstrip anything he can buy. This is not knocking the queen-breeders by any means, for we must have them; but a queen purchased from any breeder is an unknown quantity until tried out. I would not want to rear queens from a purchased queen until tried out the previous year, if I was breeding a strain of honey-getters. I believe it will pay any apiarist to buy 10 or 15 good queens every year from some reliable breeder. After trying them out one season, mark the best queens, start your cells from part of the best ones the next season, and give the others a frame of drone comb. Flood the yard with good yellow drones, and thus offset some of the thousands of black fellows your good (?) neighbor is furnishing you from his box hive free of charge.

W. S. Pangburn.

Center Junction, Iowa.

* * *

In Oregon.—Practically no rain has fallen in many sections of the Pacific Northwest west of the Cascades since April, which has resulted in the clover drying up early. Following the clover flow there has been a medium flow from French pink (*Centaurea cyanus*). As a result, the honey flow is slightly less than normal and darker. The flow from fireweed will probably be light as a result of the drouth.

In the irrigated sections of western Oregon the alfalfa and sweet clover flow will be slightly better than normal.

From many sections reports continue to come in telling of heavy winter and spring losses. To many the past winter has clearly demonstrated the importance of giving more attention to wintering. Those who gave their bees some protection wintered well with little loss. As a result, many of the large commercial producers are seriously considering packing of some kind. The importance of having a large force of young bees reared during August and September should be emphasized, as well as the need of abundance of stores. The writer believes 50 pounds should be the minimum for western Oregon where more stores are used than in colder sections, due to frequent flights.

Corvallis, Ore. H. A. Scullen.

HEADS OF GRAIN FROM DIFFERENT FIELDS

How to Secure Chaff for Packing. I have seen the state in Gleanings that it is impossible to separate the straw and chaff with a modern thresher and blower, but this year I secured a nice lot of chaff for packing the bees. We removed a board in the bottom of the separator just in front of the blower of the wind stacker. This allowed most of the chaff to fall through, while the straw passed over into the blower. A boy can rake it out from under the machine as it accumulates. We used a Frick separator, although I suppose this can be done with other makes of machines. H. C. James.

Wooster, Ohio.

* * *

Importance of Display Signs for Comb Honey. In view of the movement on foot at the present time to educate the public to the proper names and uses of honey, it is amazing to note the atrocious methods still used by many retailers in placing honey before the public.

For instance, the following sign was conspicuously displayed on some beautiful comb honey in the window of one of our grocery stores:

SPECIAL!
PURE HONEY,
25c A CARD.

This honey would have sold better on its appearance alone, as a comb of honey conjures visions of a delightful toothsome delicacy, but I am sure no one would get enthusiastic over the prospect of eating a "card of honey." Too reminiscent of paste board.

Another enterprising retailer tried to boost his honey sales by the following:

VERY FINE HONEY,
28c PER CAKE.

Immediately next to this in the window was a display of soap at "5c a cake," so we can well imagine how many prospective customers lost their appetite for honey through seeing this display.

In my opinion beekeepers, especially the large producers of comb honey, would be more than repaid for the slight cost of printing if they would enclose an attractively gotten-up display sign with each shipping case, to be used in presenting their goods to the public. Practically all manufacturers of standard products do this, and the retailer will almost invariably use this prepared advertising rather than go to the trouble of making a sign himself.

The above instances are just two casual observances in this city. No doubt a careful investigation would show that thousands of sales are being lost through the labeling of honey as "cards," "cakes," and other misnomers. R. K. Rickard.

Minneapolis, Minn.

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Bees Good Advertisement for Honey and Other Farm Products. I believe that beekeeping makes as interesting and profitable a hobby as one can find in country life and, above all, the best kind of advertisement for farm produce. People motoring along judge our products by their outward appearance. The paint on the hives is money well spent, and the orderly arrangement of the hives makes a pretty sight. These are the first attractions that bring customers to our door. A friend who saw I was selling my own honey at home gave me a commission to sell some of his, and I helped him move a large crop. In all, I sold more than two tons of honey from my door. If I were stationed along a good highway with suitable surroundings, I would certainly sell honey whether I kept bees or not. George H. Foot.

Grand Rapids, Ohio.

* * *

Introducing Queens in Difficult Cases. Those who have had poor success in introducing queens by the regular method, especially with hybrid bees, should try this method:

Before introducing the queen nail a piece of tin over the candy end of the cage, which will prevent the bees from releasing her. Remove the queen from the colony to be requeened, insert the cage containing the other queen in between or on top of the frames. After five or six days remove the tin from the candy end of the cage, allowing the bees to release the queen in the regular way, at the same time destroying all queen-cells. The hive should not be examined until after five days have elapsed.

Medina, Ohio. J. E. Thompson.

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Breeding Bees Suited to the Locality. I believe that locality plays a very important part in the results obtained with bees and their behavior. I also believe that greater success may be attained by selection and breeding different strains of bees for different localities—even the making of a new race by combining the desirable traits of the different races in one. It cannot be accomplished in one year or in two, but it is, in my opinion, well worth working for. I do not believe that the desired end can be reached by buying queens from different sections of the country, even though the best. The infusion of new blood may be a good thing, but it may prove the opposite of what is expected. Nature's laws aim to build a race to meet the conditions under which they must exist and fulfill their destiny.

Caribou, Maine. O. B. Griffin.

JUST NEWS

Editors

FOLLOWING is a portion of the tabulated figures on the honey crop, based upon returns from thousands of beekeepers in all parts of the country to the Bureau of Markets and Crop Estimates, U. S. Department of Agriculture. These figures, which have already been released by the Department, will be published in the July (1922) issue of Weather, Crops and Markets, issued by the Department of Agriculture. The figures indicating the condition of the colonies and the honey plants for the various states are omitted here for lack of room. For the United States the condition of the colonies to July was 93.2% this year as against 89.8% last year, and a six-year average of 89.3%. The condition of the honey plants to July 1 this year was 83.8% as against 78.6% last year and a six-year average of 83.5%.

States.	Yield of surplus honey per col. to July 1. 1922. Lbs.	1921 Lbs.	Av. 1916-1921. Lbs.	Propor. of crop usually produced to July 1. Per cent
Maine	17	20	10	20
New Hampshire	20	30	22	48
Vermont	17	21	11	24
Massachusetts	18	31	18	40
Rhode Island	15	3	19	40
Connecticut	15	35	18	30
New York	20	26	17	29
New Jersey	32	26	28	60
Pennsylvania	33	22	22	45
Delaware	15	0	21	70
Maryland	35	17	30	76
Virginia	25	14	25	63
West Virginia	20	20	19	61
North Carolina	22	8	20	63
South Carolina	21	11	23	75
Georgia	20	27	25	70
Florida	45	35	39	65
Ohio	50	50	27	55
Indiana	60	47	24	47
Illinois	45	15	15	38
Michigan	42	38	23	44
Wisconsin	34	25	17	35
Minnesota	24	15	14	29
Iowa	40	24	21	35
Missouri	35	28	18	50
North Dakota	30	0	13	10
South Dakota	20	17	12	20
Nebraska	20	18	13	19
Kansas	24	18	14	40
Kentucky	28	40	29	60
Tennessee	17	30	24	75
Alabama	20	25	23	65
Mississippi	18	26	26	70
Louisiana	45	24	27	75
Texas	25	33	26	65
Oklahoma	30	20	16	44
Arkansas	30	17	21	75
Montana	5	10	8	10
Wyoming	10	8	2	0
Colorado	7	4	4	7
New Mexico	22	18	15	37
Arizona	30	25	35	60
Utah	3	4	6	10
Nevada	25	0	12	10
Idaho	5	4	4	5
Washington	17	10	12	25
Washington	17	10	12	25
Oregon	21	8	14	40
California	44	17	35	60
United States	30.0	23.7	22.5	48.7

The Georgia Beekeepers' Association will hold its regular annual meeting at Hopkins, Ga., August 24, 25 and 26. This is one of the meetings arranged by the schedule committee of the American Honey Producers' League. Information concerning the program for this meeting may be had by writing to J. J. Wilder, Waycross, Ga., president, or to L. C. Walker, Alma, Ga.

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Colin P. Campbell, attorney-at-law, Grand Rapids, Mich., who is preparing a booklet for the American Honey Producers' League on laws pertaining to beekeeping, reports that he expects to have the manuscript finished in July. This booklet is to contain the various court decisions that have been handed down from time to time where bees were involved in a law suit. It is also to contain a tabulation of the inspection laws in the various states. Mr. Campbell is not making any charge for his services in preparing the manuscript for this booklet. The American Honey Producers' League has appropriated $100 to pay for the mechanical work in its preparation. The booklet will be sold at a low price by the American Honey Producers' League when published.

* * *

The Empire State Federation of Beekeepers' Co-operative Association, Inc., formerly the New York State Association of Beekeepers' Societies, will hold an annual picnic and summer meeting at the home apiary of N. L. Stevens, Venice Center, Cayuga County, N. Y., Friday, August 4, 1922. Beekeepers of New York State have declared this a holiday and the Federation has used every effort to make this the best and biggest summer meeting ever held within the state.

* * *

The Wisconsin Beekeepers' Field Meet and Conference will be held at Green Bay, Wis., Aug. 7-11. This is the fourth annual meeting of this kind held under the auspices of the College of Agriculture and the State Beekeepers' Association. Among the speakers from outside the state are C. P. Dadant, Dr. E. F. Phillips, E. R. Root and Geo. S. Demuth.

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The Eastern Massachusetts Society of Beekeepers will hold their annual field day at Boston, Mass., on Saturday, August 19. Dr. E. F. Phillips is to be the principal speaker at this meeting.

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The Pennsylvania State Beekeepers' Association, together with the Northern Pennsylvania Beekeepers' Association, will hold a joint field meeting at the apiary of Harry Beaver, Troy, Pa., on August 3.

GLEANED BY ASKING

Geo. S. Demuth

Question.—I have a market for more chunk honey than I can produce. Would it be all right to buy some extracted honey to feed back to the bees in order to be able to produce more chunk honey?

Illinois. Frank Van Hooveheke.

Answer.—Feeding back extracted honey to produce chunk honey or comb honey is difficult to accomplish at a profit. When everything is just right the bees will sometimes store from two-thirds to three-fourths as many pounds as you feed them, but when things are not exactly right they will sometimes store only one pound for every two pounds fed. There is a great difference in colonies in this respect and weather conditions have much to do with this. Formerly many comb-honey producers practiced feeding back extracted honey to cause the bees to finish the sections that were unfinished at the close of the honey flow, but this practice has been given up by most producers on account of the losses which came about and the inferior product resulting from feeding. When honey is fed back in this way, the comb honey thus produced usually granulates early in the season. Perhaps you can purchase chunk honey from some other beekeeper to supply your trade. If so, you will find this much more satisfactory than to try to produce it by feeding back.

Honey from Corn.

Question.—Do bees commonly put corn honey into sections which are left on a few days too long? Is not corn honey a very dark or sooty-colored honey? Arthur S. Hill.

Pennsylvania.

Answer.—Corn is not a nectar-bearing plant. It is wind-pollinated, i. e., the pollen that fertilizes the corn is carried by the wind instead of by insects. Wind-pollinated plants usually are not nectar-bearing. The dark honey which the bees stored at the close of the season must have been gathered from some other source. It may not have been floral honey at all but honeydew, in which case, of course, it would be gathered from whatever plant the aphis which produces it lives on.

Bees Do Not Cap the Honey.

Question.—Why does one of my colonies fail to cap its honey, while the others cap theirs?

Pennsylvania. Edwards McClure.

Answer.—There are several conditions under which the bees hold open the cells after they have been filled with honey. (1) When combs are very thick so that the cells are quite deep, the ripening process is slower than in combs having shallower cells, and, since the bees do not seal the honey until it has been ripened, the combs having deeper cells are sealed later than those having shallow cells. (2) During a good honey flow, if the bees become crowded for room, they are inclined to hold the cells open even after the honey is ripened, apparently for the purpose of crowding in a little more honey by further ripening. In such cases, giving an additional super usually results in the honey being sealed promptly as soon as work is begun in the new super. (3) If there is an opening in the super, the bees usually fail to seal the honey near the opening. For this reason it is not practical to have ventilators in comb-honey supers as some do in extracting-supers. (4) At the close of the season the bees usually leave some of the latest-stored honey unsealed. There is no way known to induce them to seal the last few pounds they store.

Looking Through the Hives for Moth Larvae.

Question.—Is it necessary for me to look through the hives for moth larvae? I found two of these inside of one of the covers.

New Jersey. Ruth French.

Answer.—No. Let the bees do the work of looking for moth larvae and carrying them out if any get into the hive. Strong colonies of Italian bees are able to defend themselves against the larvae of the wax moth. If you should find any moth larvae in the combs within the hive, this would indicate that there is something wrong with the colony (especially if Italians), such as queenlessness or one of the brood diseases, which has caused it to become weak.

Velvet Bean as a Honey Plant.

Question.—Is the velvet bean a good honey plant? I can find nectar in the flowers but have never seen any bees working on them.

Alabama. J. M. Sturtevant.

Answer.—The velvet bean is reported as a good honey plant where it is grown in sufficient quantities. The fact that nectar was visible in the flowers indicates that it was yielding freely at the time. The bees must have been finding plenty of nectar elsewhere since none were seen working on the flowers. Sometimes during a heavy honey flow the bees seen working on the flowers are not so numerous as one would expect, but when the honey flow slackens the bees appear on the flowers in greater numbers. This is probably because the bees spend but little time in gathering a load of nectar when it is abundant, visiting fewer flowers, while many flowers must be visited to obtain a load when nectar is scarce, making it necessary for the bees to spend more time searching.

Treatment for Foul Brood.

Question.—Please give instructions for getting rid of foul brood. Is it necessary to destroy all the combs and honey, too? U. R. Gentzell.

Pennsylvania.

Answer. If you refer to American foul brood it is necessary to destroy the combs, but the honey can be saved if desired and fed back to the bees after it has been sterilized by boiling it in a closed vessel for 30 minutes, first diluting it by adding about equal parts of water to the honey. If there are only a few colonies to be treated, it does not pay to try to save the honey. The wax in the combs can be saved by rendering them if the beekeeper is equipped to do this, but those who are not willing to take great care in doing this should burn the combs or they may spread the disease among other colonies.

The best time for treating colonies having American foul brood is at the beginning of the honey flow, for then they build the new combs readily and should be able to store enough honey for winter. Where there is a fall honey flow colonies can successfully be treated now; but, if there is no fall honey flow, colonies having this disease at this time may as well be destroyed, especially if but one or two diseased colonies are found in an apiary. If the bees are in an old, worthless hive, the hive, bees and all can be carried away in the evening after the bees are all at home, placed on top of a brush pile and burned.

To treat a colony having American foul brood, set its hive off of its stand and put another hive in its place, the new hive being equipped with narrow strips of foundation. Now take ou the combs of the diseased colony and shake the bees from each, shaking them upon a newspaper placed in front of the new hive so arranged that the bees will enter the new hive as they are shaken from the combs. When the bees have been shaken from all of the combs, those which cling to the old hive should be dumped in front of the new hive. The combs should be burned or melted immediately unless several colonies are to be treated, in which case the combs can be placed in an extra hive-body and put on top of one of the diseased colonies which is to be treated three weeks later after the brood has emerged. Only the most careful beekeepers should attempt to save the brood in this way.

As soon as the bees have all been transferred to the new hive every part of the old hive should be taken away and thoroughly cleaned on the inside, to be sure that not a particle of honey can remain on the walls of the hive. Before being used again it is well to scorch the inside of the old hive by means of a painter's torch or by pouring kerosene on the walls, and then burning it off, being sure to put on the cover to smother the fire before the wood is burned.

A queen-trap or an entrance-guard should be placed over the entrance of the new hive for a few days to prevent the escape of the queen, if the colony should swarm out after treatment as they often do.

The treatment for European foul brood is quite a different matter. This disease is controlled largely by keeping the colonies strong, especially in the spring, and keeping only a good resistant strain of Italian bees. If the disease develops under these conditions, dequeening for 10 or 20 days, and then requeening with a young Italian queen is usually sufficient.

Liquid Capacity and Honey Capacity of Jars.

Question.—What is the difference between the liquid capacity and the honey capacity of jars? The liquid capacity of a jar holding one pound of honey, net weight, would be 12 ounces according to my understanding; therefore a jar having a 10-ounce or 11-ounce liquid capacity is too scant. Am I right? Josephine Morse.

Massachusetts.

Answer.—The liquid capacity is figured on the basis of pure water, and, since the specific gravity of honey is nearly 1.5 or one and a half times as heavy as water, the honey capacity of any container can be figured by multiplying the given liquid capacity by 1½. A jar of 12-oz. liquid capacity would therefore hold between 17 oz. and 18 oz. of honey. A 10-oz. jar liquid capacity would hold 15 oz. or a little less of honey. A 11-oz. jar liquid capacity would be just about right for 1 pound of honey. A 9½-oz. jar liquid capacity is just right to hold 14 oz. of honey.

Italianizing Late in the Season.

Question.—Is the first of September too late to Italianize my bees? Walter Steen.

Virginia.

Answer.—The first of September is not too late to Italianize, but it is a little too late to obtain the full benefit of having a young queen during the fall brood-rearing period when the bees that survive the winter should be reared. By requeening in July or early in August with young Italian queens you not only Italianize your colonies but also secure better colonies for winter, if in doing this an old queen is replaced, for the young queen will lay more eggs in August and September than an old one. The bees that are in the hives now are not the ones that form the winter colony since they will all die of old age before winter really begins; hence the importance of having a young queen during August and September.

Appearance of Unripe Honey.

Question.—What is the appearance of unripe honey? W. Burden.

New York.

Answer.—While still in the combs, the unripe honey is in cells that are not capped, and if still quite thin it can be shaken out of the combs or it may spill out of the cells if the combs are held in a horizontal position. Newly gathered nectar is not always so thin as this, however, especially in a dry climate or during a dry season. If extracted before it is ripened, honey is thinner than when it is well ripened and weighs less than 12 pounds to the gallon. Well-ripened honey weighs nearly 12 pounds to the gallon or nearly 1½ pounds to the pint. Unripe honey, if kept for some time, usually begins to ferment. When it does this the flavor is impaired and often the cans become swollen, sometimes even bursting.

TALKS TO BEGINNERS

Geo. S. Demuth

THROUGHOUT the greater portion of the United States August is a quiet month for the bees, though the beekeeper may be busy caring for his honey crop and seeing that his colonies are in proper condition for fall. Usually there is but little if any nectar available during the first half of the month, except in certain especially favored regions such as portions of the alfalfa and sweet clover regions of the West. While the recent rains in the clover region have revived the white clover so that there may be a large amount of bloom in some places, not much nectar can be expected from this source in August. Beginners are often puzzled to note that the honey flow from clover ceases in July, even though there is apparently an abundance of bloom left. Occasionally the late-blooming clover furnishes considerable nectar, but it can not be depended upon even to furnish enough for the bees to live on this month. In portions of the clover region, conditions are favorable this season for some nectar from the second crop of red clover. Sometimes this plant yields in sufficient quantities to make it necessary to put the supers back on the hives to furnish room for the red clover honey. Those who are located where much red clover seed is produced, should watch their colonies to see if they store from this source.

When no nectar is to be had most of the bees if undisturbed stay at home even during the middle of the day, only a few going to the fields. Some of these carry water and some carry pollen. This lack of flight is quite noticeable, especially when the honey flow closes abruptly, thus emphasizing the contrast between the busy days of the honey flow and the leisure after its close.

During hot weather great clusters of bees hang quietly on the outside of the hive in strong colonies. Beginners, who have read in the books and journals that bees should not be permitted to cluster out in this way, are sometimes greatly disturbed to find all their strong colonies clustering out after the honey flow has closed, but it is quite normal for them to do so. The great army of workers that have suddenly found themselves without a job must go somewhere, and, if there is not room for all of them inside the hive during the heat of the day without danger of suffocation or melting the combs, clustering out is the proper thing for them to do. The caution in the books and journals against permitting the bees to cluster on the outside of the hive refers to clustering out during the honey flow, not after it has closed.

During hot weather bees use considerable water, and the water carriers are sometimes annoying around watering troughs or pumps. This can be avoided by placing a jar of water near the hives to supply the needs of the bees. A layer of cork chips, such as those used in shipping grapes, makes a good float to prevent the bees from drowning. After the bees have formed the habit of obtaining water at a pump or watering trough it is difficult to entice them away by placing water near them; but, if this is done early or the supply shut off at the other place, they will soon learn to go to the supply provided by the beekeeper.

Care of Comb Honey.

Those who took off comb honey promptly as soon as finished, as advised last month, will no doubt have it all taken off before this journal is mailed, except in the few regions where the honey flow continues through July. The supers of finished comb honey should be stored in a dry room, preferably an upstairs room. Comb honey will absorb moisture through the cappings if exposed to dampness, and if much moisture is absorbed the expansion of the honey in the cells sometimes bursts the capping and honey oozes out, thus spoiling its appearance. Such honey usually ferments slightly, which also spoils its flavor. Even if the cappings are not broken out the expansion of the honey sometimes causes it to fill the cells completely against the capping, causing the capping to take on a water-soaked appearance. All this trouble can be avoided by proper storage in a dry room.

The supers of finished honey should be piled in a tight pile, the first super being placed on a flat board or an inner cover and the top of the pile covered tight. The pile should not rest directly on the floor unless in an upstairs room. A hive-body or box can be used to support the pile above the floor.

Wax Moth Larvae May Damage Comb Honey.

Sometimes the larvae of the wax moth get into comb honey after it is taken from the hives. The first indications of their work are patches of fine particles resembling fine sawdust, which may be seen on the surface of the combs or in vacant cells at the edge of the section. A little later the tiny larvae can be seen eating holes in the cappings.

If wax moth larvae appear they should be killed by placing a small amount of carbon bisulphide (obtainable at drug stores) in a shallow pan which is set on top of the upper super in the pile but inside of an empty super, the cover being placed over this empty super. An ounce of carbon bisulphide is sufficient to kill all the wax moth larvae in five or six ordinary comb-honey supers within half an hour. This fumigation, if needed, should be done about two weeks after the honey was taken from the hives. It should then be safe without further fumigation if stored in tight boxes or comb-honey shipping cases.

Early Honey Removed Before Fall Flow.

Honey that is to be extracted should not be left on the hives longer but should be taken off and extracted early this month, if this has not already been done. The only exception to this of course is in the few locations now having a honey flow; but, even in such locations, the earlier-gathered honey should now be taken off and extracted. Later in the month the bees may gather darker honey than that gathered earlier, and the two kinds of honey should not be mixed.

In taking off honey during a dearth of nectar, great care is necessary to prevent robbing. If the honey is taken off by means of a bee-escape, it is important to be sure that there are no cracks under the cover where bees might crowd in, for robber bees would soon find these openings, and when the super of honey can no longer be protected by the bees inside, the robbers make quick work of carrying away the honey if they are able to crowd through a crack into the super. When honey is taken off without the bee-escape as described last month, the combs of honey, as they are taken out of the hive and put into the extra super, should be covered immediately with a piece of canvas so robbers do not get a taste of the honey. Honey that is taken off in this way and extracted immediately is easier to extract than after it becomes cold. For this reason some use the ventilated escape-board, for with this the honey does not cool off as much as when the ordinary escape-board is used.

What Colonies Need in August.

As to the care of the colonies this month, the important thing to keep in mind is building now for next year. The condition of the colonies at the beginning of winter is determined largely by the conditions during this month and next. No matter how strong the colonies are now, if no more brood were reared this season they would be worthless for winter, since the bees now in the hive will all have died of old age before winter or be too old to survive the winter. The bees which live through the winter and early spring must therefore come from the eggs that are laid from this time until brood-rearing ceases in late September or early October in the North, and a little later in the South. Where there is no fall flow, the actual strength of the colony now is less important than the amount of brood that is reared in August and September. The bees naturally reduce the amount of brood during late summer and fall, especially if the queen is old or inferior. When there is a fall honey flow the bees usually rear plenty of young for winter; but, if there is a dearth of nectar, they may not do so except in those colonies which have young queens reared this season and which have a sufficient amount of honey so that brood-rearing need not be reduced on account of insufficient stores. The only safe thing for the beginner to do, who does not know whether his locality furnishes a dependable fall honey flow, is to leave enough honey now to run the bees through a possible dearth of nectar from this time on. Usually colonies operated for extracted honey put nearly all their honey into the supers, so there would be but little left if all the honey were taken from the supers. At the close of the honey flow, at least five full frames of honey should be left in the upper story when taking away the honey. This much should be left, even though there will be none to extract unless a fall honey flow is certain. Colonies operated for comb honey will have more honey in the brood-chamber at the close of the honey flow, but even these sometimes do not have enough to last them through a long dearth of nectar during late summer and fall. To be safe, they should have the equivalent of four or five full frames of honey.

In addition to an abundance of stores each colony should have a good queen. This is a good time to replace old and otherwise inferior queens, for a young queen that begins to lay this month, together with plenty of stores, will practically insure that the colony will be in good condition for winter.

To find and kill the old queen and introduce a young one at this season is sometimes quite a task for a beginner; but it can be done, and the ambitious beginner need not hesitate to undertake it if he has only a few colonies. The printed directions, sent out by the queen-breeder, for introducing the new queen should be strictly followed.

It is not necessary, of course, to replace any but old queens. If any of the colonies have swarmed during the season, it should be remembered that the parent colony has a young queen if all has gone well, while the swarm has an old queen. The young queen in the parent colony should not be replaced, unless she is of inferior stock or is otherwise undesirable.

Management for a Fall Honey Flow.

In localities where much buckwheat is grown and near swamps where fall flowers are abundant, the main honey flow of the season may begin this month. In such localities of course it is not necessary to leave so much honey in the hives at the close of the early honey flow. For extracted honey most of the early-gathered honey can be extracted and the empty combs put back on the hive and left there for the fall honey flow. It is usually not best to put on comb honey supers for the fall honey flow, for fall honey is usually dark and not suitable for comb honey. It is better to put on an upper story of combs or full sheets of foundation as for extracted honey, and, if these are filled, this dark honey may be needed next spring for brood-rearing. If not too far north where winters are severe, this upper story can be left on all winter. Colonies thus abundantly supplied should build up rapidly next spring.

OUR HOMES

A. I. ROOT

What hath God wrought?—Num. 23:23.

Seek ye first the kingdom of God, and his righteousness, and all these things shall be added unto you.—Matt. 6:33.

I have also given thee that which thou hast not asked, both riches and honor; so there shall not be any among the kings like unto thee all thy days.—I. Kings 3:13.

On page 742 of Gleanings for November, 1919, you will find a letter from S. S. Kresge and some of my remarks in regard to it. Kresge is the man who gave $10,000 in a single subscription to the Anti-saloon League while the fight was under way to make Michigan dry. The brewers got track of it; and knowing that he is the proprietor of a chain of five and ten cent stores scattered all over our land, they suggested that it would be wisdom for him, to be a little careful or the liquor party might decide unitedly to get him into financial trouble. Instead of being scared he promptly turned over to the Anti-saloon League another $10,000; and some good authority has stated that this man Kresge probably did more to help Michigan take the lead in the list of dry states of the Union than any other man.

Our readers will remember that I went through Henry Ford's great factory, or string of factories, some years ago, and I wrote it up for these pages. Well, I have been thinking for some time, especially since Ford is just now astonishing the world, that I should like to go through his plant once more. And now you can understand that it was one of my "pleasant surprises" when I received an invitation to visit Kresge, and at the same time look over the Ford plant once more. If you now excuse me I wish to sidetrack a third time.

Some of you have taken Gleanings long enough to remember my hobby of five and ten cent stores away back in 1880—42 years ago; and I gave on these pages pictures of the five and ten cent counter which we installed on the fairgrounds here in Medina, and told you what a success it was. I find by looking back that I continued the five and ten cent trade, and sending the articles by mail, for something like 15 years. At about that time I was advised by the doctors that I had only a short time to live, even though I should go to a warm climate, give up business, and do everything possible to live a little longer. Then a little later I told about running away from my own *funeral*, by riding a *bicycle.* Now, about the time I dropped the "counter store," as we called it, my good friend Kresge took it up. I recently went through his great store in Cleveland. Although his establishment is of itself a small-sized *city* (so it seemed to me), it was really a beehive, of human beings instead of bees. I think there were something like 250 clerks, most of them girls—nice, bright, quick, smiling girls. Everybody seemed to be happy. The store was so crowded that we often had to wait before we could get around. In one of the basements there was a neatly arranged restaurant or lunch room; and I had a very nice supper—all that was good for me—for just 15 cents. I am told there are now something over 200 such Kresge establishments scattered throughout the principal cities of the United States. Now, please do not think I am bragging when I suggest to you that not only Kresge but even Luther Burbank himself have intimated to me that they were pupils in bee culture, and took my little journal, years ago, almost when it was started. Kresge especially tells me of the great interest with which he studied the A B C book in years gone by, and that the money he received from his bees helped him to finish his course in college. Now for the Ford establishment.

The Ford Plant Makes Finished Automobiles Faster Than a Queen Bee Lays Eggs.

I shall have to go over it very briefly on account of my limited space. As before, we had to wait for the crowd up to a certain hour, when a guide was appointed to take charge of visitors. The first thing that impressed me was just *acres* of busy men, all so close to each other that many times it seemed they lacked elbow room. A pathway was roped off for visitors; but when there was actually no room to get through, Ford was thoughtful and kind enough to make an overhead bridge or runway where visitors could stand and see what was going on below. I was impressed during my former visit with the moving platforms or broad belts that carried the heavy parts of the automobile from one place to another. In many places this belt moved so slowly that the workmen on both sides of it performed their part of the work while it was moving. Then besides these moving platforms or tables, as it were, there were belts or wire ropes in motion overhead; and from these moving ropes hooks came down, and workmen were constantly placing pieces of finished work on these hooks; and so, instead of heavy lifting, or sending a boy or man to carry the different parts, they had but just to reach overhead and unhook where wanted. These strings of moving hooks went everywhere. It seemed as if they traveled miles.

I was interested in studying humanity as well as machinery—yes, more so. I wanted to see if the thousands of busy men and boys were happy at their work. While many of them looked weary (for it was near the hour of quitting) I saw no evidence of discontent. I think they work on eight-hour shifts, and the great factory is kept running without stopping from 12 o'clock Monday morning till 12 on Saturday night. So far as I could learn, Ford has given strict orders to "remember the Sabbath day to keep it holy"—that is, so far as possible. I watched the sea of human faces to see if I could spy out drones or lazy or dishonest men. My good friend, Rev. A. S. Gregg, of the Civic Reform Bureau of Cleveland, who was along with us, suggested that a man could not very well *loaf*, with a busy man before and behind him depending on his movements. So they all work together like the bees in a hive; and I could not discover in all that trip that occupied 45 minutes any one who seemed to act as foreman over the different gangs. I did not see an idle man anywhere. By the way, our friend Kresge, notwithstanding his chain of over 200 stores, has just recently taken up beekeeping once more; and as we passed along he suggested in his droll way that Henry Ford was turning out *a finished automobile* in about the same space of time that it takes a *queen bee to lay an egg*. Our guide, I think, informed us that they are making now about 4800 automobiles, ready to run, every 24 hours. We have *records* of queens laying as many as 3000 eggs in a day; and it is very likely that there may be an occasional queen that will lay *4800* eggs.

Perhaps at just this point some of you may wonder what the second text has to do with what I have been telling you. It has suggested itself to me in this way: Both Kresge and Ford started out, so far as I can determine, to benefit humanity, and not to make money and get rich; but the great loving Father has blessed them as he did Solomon of old in giving them wealth as well as wisdom. I have been watching both Ford and Edison since they stepped foot among humanity in this busy world of ours; and I have been impressed by the fact that in both cases their mission and desire were *not to make money*, but to benefit humanity. They both loved their fellow-men, and God recognized them and gave them the means. In fact, we do not know what they may do yet before they die. And our good friend Kresge in another way has helped humanity. When I started that little counter store, as we called it 42 years ago, it was principally with the view of helping young married couples with limited means, to get the things needful in starting a home, at a low price, and with as little running about as possible; and Kresge is doing this on a tremendous scale all over our land. He is not only a temperance man but a Christian man, and God has honored him.

As we left the Ford plant I remember saying to my good friend Gregg that, if Ford had not already done so, he ought to thank God devoutly for having permitted him to be the humble instrument of doing so great a work. Gregg's reply was something like this:

"Mr. Root, I feel sure our friend Ford thanks God for what he sees being done, very much along the same line you do; but where you say 'Thank the Lord' out loud, Ford does it in another way. We are not all alike, even in our way of giving thanks to God."

With the above preface, my good friends, I want to quote to you Kresge's own words when he addressed our helpers here at the time of his visit to our establishment the fore part of May.

Address of S. S. Kresge at Medina on May 9, 1922.

I have been almost talked to death, so I don't know just what else I have to say, but I might give you a little incident of what happened while Billy Sunday was in Detroit and we gave up our house for eight weeks to house his organization. That was in 1916, the same year that Michigan was made dry. During that time, Fred Fosdick of Fitchburg, Mass., called with a delegation to solicit Billy Sunday to come out to their town, and Mr. Fosdick, by the way, is one of the committeemen of the National Anti-saloon League (I am now headed for their meeting at Washington Thursday). He stopped at a corner where a policeman was stationed and said, "Officer, which hotel is Billy Sunday stopping at?" "He isn't stopping at no hotel—he's at Kresge's mansion," replied the officer. "Who's Kresge?" returned Mr. Fosdick. "Don't you know who Kresge is? He's got about a thousand stores around the country." Of course Mr. Fosdick knew all about me, but he wanted to find out how well I was known in my own town.

About 35 years ago (I was then located on a farm in Pennsylvania, where I am now headed to see my mother), I used to buy bee supplies from this place. I had many happy days with bees. I always had a great fondness for them, because my parents gave me the privilege of keeping the money from the bees, as I worked with them at odd times and on rainy days, and really robbed my parents of no time. About that time they sent me to Fairview Academy, about three and a half miles away, where I walked one whole winter, morning and night, no matter how deep the snow or what the weather. I went with the understanding that, if they sent me there until I was 21 years old, I should give to them all I earned outside of from the bees. They needed it, and I knew they needed it. Just around that time I had some pigeons—I really don't know just where I got them, but when I sold them I bought turkey eggs with the money. I had poor luck with turkeys, but sold them the next fall and with that money bought some bees. When I was 20 years of age the bees made enough honey so that when I sold the crop in the fall, I bought a solid gold hunting case watch. In case you do not understand what a hunting case is, it was something like this one, only it had a cover over the face and was about twice as large and weighed twice as much or more. I don't remember just how much I paid for it (about $55.00), but I paid for it and had some money left. The winter following I taught school and walked two miles every morning and evening from my parents' home and gave them the proceeds every month after paying for my necessary wants. The next fall I was examined to teach but didn't get the school I wanted, so went to Scranton and worked in a grocery store. After paying my expenses, whatever I had left I gave to my parents. I boarded with my sister and gave her $15 per month for board and washing. I was getting $40 a month, and my parents always got some money out of that. In the spring I quit my job and went back on the farm again, and during that season the bees made about a ton and one-half of honey, which I sold for about $150.

That fall I was a little past 21 and I went to the Eastman Business College. I didn't know how much it was going to cost me, so I had talked with my father and he said he would help me through if I didn't have enough. It cost $126 for a four months' bookkeeping course, so I had some money left. I started out and did several things for about two years and then got a job as bookkeeper in a hardware store—was there two years and two months, which gave me an opportunity to learn some things about that business. After that job I traveled out of Wilkesbarre, which was only 19 miles from Scranton. I traveled for five years and two months and during that time I sold to all kinds of stores—large department stores, small retail stores, wholesale hardware, wholesale druggists, meat packers, etc. During this time I sold to Woolworth and Knox who were then in the 5 and 10 cent business. Woolworth was at that time (1894) opening his twenty-third store in Albany, New York. He gave me an order of one gross of a certain article for each of the nineteen stores, which led me to believe that there was quite a volume in the chain store business. After traveling five years and two months I had saved up some money, working on salary and commission basis, and I left the road and went into the five and ten cent store business myself. That was 25 years ago last March. I have built a business which year after year has been increasing to greater volume. For the last dozen years there has been no recession. Some years are better than others; but, on the whole, the volume and net have been in excess of the next preceding year. There were 199 stores operating the first of this year, doing a business last year of almost $56,000,000.

I do not know but this plant of yours at Medina had considerable to do with my start in life. I really think it helped me to pay dividends on the five and ten cent store business. I am going to say to all of you that I am just as fond of bees today as ever and am still keeping them as a pastime and have just been trying to get official information, asking all sorts of schoolboy questions, which might appear to you people here as foolish. But when I go into a thing, I am not satisfied until I know just about as much as the other fellow. I am glad to have had this opportunity of meeting all of you, and, if anything I have said is worth anything to you, you are welcome to it.

"MEND YOUR OWN TINWARE."

"All's Not Gold That Glitters."

The article with the above heading in our issue for June illustrates something I have several times mentioned on these pages. Whatever success I have so far achieved during my busy life in bee culture, exposing frauds, or anything else, has been largely due to the kind friends scattered all over our land (and sometimes *other* lands) who have been so ready to turn in and help me in my efforts to help my fellow-men. A remarkable letter right along this line is at hand. Perhaps I should explain that I found we have seven subscribers in Atlanta, Ga. As soon as the article was in type I mailed to each one a copy of it. The letter below is the only one we have room for. If the good friend who writes this is a sample of the family doctors, let me say once more, "May God be praised for our family physicians."

Mr. A. I. Root, Medina, Ohio.

My dear friend:—Your favor asking information regarding the "United Specialty Company" of Atlanta received yesterday. They are not listed in either the telephone or city directory, and a friend of mine in the postoffice says that they have no record of any such concern ever having been here, and the license department of the city has never in the last five years issued a license to such a firm. I have seen a man selling such a solder on the streets of Atlanta only a few months ago, but he evidently was doing business without a license or his license was obtained under some other name. Today I had a man cover the business section of Atlanta thoroughly, and he reports that there is no such material being sold at the present. Therefore I have only one chance of getting the information that you desire, and that is to get the chief of police to take the matter up with his three watches and maybe in that way we can obtain some information. This will require action by the police commission, but I expect to have such permission within a few days. I am sorry that I have not been able to obtain any information, but if I do in the future I will immediately write to you.

Thanking you for allowing me to attempt to do a favor for the man who writes "Our Homes," and who preaches the best sermons that I read or hear, I am, with my very best wishes,

Yours very truly,
Linton Smith, M.D.
67 Mayson Ave., Atlanta, Ga., May 20, 1922.

Right along in line with the above comes one from a chemist.

I chanced to see your request for information on Solderine. A similar article, used in identically the same way, has been sold by street peddlers in Montreal for some years. I purchased some a few years ago and tried it out. Since it appeared to do the work I analyzed some of it, but will have to rely on my memory for the results. It consisted chiefly of sulphur (in fact, the solder would take fire) through which was intimately distributed finely divided metal. This metal was chiefly aluminum with small amounts of magnesium and iron. Approximately the per cent composition was sulphur, 60%; aluminum, 30%; magnesium, etc., 10%. When heated the sulphur is melted and on cooling forms for the hole a plastic plug which may be hammered and roughly treated when freshly applied. This makes a great sale's point. However, as you know, plastic sulphur will soon change to the common brittle form which can not be knocked around.

F. P. G. Shaw, M. A., M.Sc.
1022 Dorchester St., Montreal, June 9, 1922.

In my article referred to in the June issue I said: "It seems to me the invention may be worth millions of dollars." I am glad I put in the words "It seems to me." One other friend whose letter I have not retained said something like this:

"Mr. Root, the soldering process *works* all right and *looks* all right; but. sad to tell, it does not *stand*."

Now, the reason it does not "stand" has been explained by the chemist. I saw the man on the fairground solder up breaks in all kinds of metal. The liquid metal, so it looked to outsiders, flowed beautifully, ran into cracks of rusty tinware, and seemed to work exactly like melted tinner's solder. I learn that the thing has been done by peddlers and hawkers on fairgrounds, and even in cities, all over this land of ours. Why is it not on sale by our hardware men, tinsmiths and others? I will tell you. By some process, unknown to me just now, aluminum is easily procured in the form of a very fine powder, exactly like *dust*. To my surprise we have been using it for years to make the "aluminum paint" for lettering our honey-extractors. Well, somebody without conscience, or at least not much conscience, discovered that this aluminum powder would mix with melted sulphur so as to look exactly like melted tinner's solder; and because melted sulphur will run into everything and on every thing, and stick pretty tenaciously (perhaps better on rusty metals than if they were bright) this man without a conscience discovered peddlers could make big pay by exhibiting it and recommending it as real solder. Now, melted sulphur, or brimstone, as it is often called, *is* a pretty good cement of itself. If you put it into a cavity or hole where it can not get out, the fact that it expands in cooling, exactly as water expands in freezing, is a fine thing. Bolts and even fence-posts are fixed durably into a hole drilled in a block of sandstone, by pouring melted sulphur around the posts or bolts. When it crystallizes after a time, and turns to brimstone, it is almost as firmly fixed as if imbedded in cast iron.

Let me now digress a little.

When a boy in my teens I went around from house to house mending tinware free of charge. Of course every housewife had more or less leaky tinware. When I said I did the work free of charge I explained that it was because I had a little bottle of soldering-fluid for 25 cents used in mending the tinware. Then I showed the housewife or the boys and girls how to do it. And I made pretty good wages except for the fact that I was obliged to travel on foot. We did not have bicycles then, and of course I had to pay for my board and lodging. Well, the success of this scheme depends on the fact that the agent mends the tinware in order to show the people how. After having done so, of course they do not refuse to pay him 25 cents, or even 50, for a stick of sulphur combined with this powdered aluminum. No tinner or hardware man would handle it, because, after this stuff proves to be brimstone instead of solder, his customer would come back, and this is why it is hawked through the cities or sold on fair-grounds.

Now, the people I have shown up may come back at me and say the sulphur or brimstone repair not only looks nice, but, when blended with aluminum powder, will stand a long while, and in many cases it does considerable service. Of course there must be a big profit to have the agent travel around and show people how to use it. The largest manufacturer prints directions as below:

> INSTANT MEND-ALL.
>
> Price 50c—Saves You Many Dollars.
>
> Mends granite, aluminum, galvanized iron, tin, copper, brass, or any kind of metal.
>
> Directions for Using:—Heat article to be mended on any kind of fire, hold pencil on until it flows freely, then dip in water. Articles you can't set on fire to heat, such as radiators, tanks, busted pipes, etc., light with a match and warm article with lighted paper; if it blazes after mending, blow out.
>
> Satisfaction guaranteed.
>
> INSTANT MEND-ALL SOLDER CO
> 1208 Hampton Ave. Paducah, Ky.
> Agents Wanted.

They sell sticks by the hundred for 6 cents apiece. If you take a thousand sticks the price is only 4½ cents each. But the retail price is 50 cents. The 50 cents pays the agent for his time in mending their utensils and teaching them how to do it.

In some cases it seems the price is $1.00 for a large-sized bar. See letter below:

> I read your description of the new metal in Gleanings, and I think that I have the same thing. A man passed through here about one month ago demonstrating and taking orders. He would not give an agency for less than an order of 100 bars, and I ordered the 100 bars after I saw him mending holes in different kinds of cooking ware, including granite and aluminum. These bars which he had with him measured one inch across and were half round and five inches in length, and retailed at $1. He refused to tell where it is made. He said he had the state right and would deliver every month to all his agents, and they must all sell at his fixed retail price. S. Whann.
>
> Polk, Pa., June 20, 1922.

Perhaps I should add that in working with these sulphur and aluminum cements you will have to be careful about overheating; and if you use flame for the heat, the flame must be on the side of the utensil opposite where the solder is applied, for the reason that, if you get just a little too much heat, the sulphur will take fire. When it does take fire you must blow it out or dip it in water. So long as the sulphur remains in a plastic condition, say like wax or rubber, it is all right; but in a week or ten days it turns to brimstone and lets go whenever it gets bumped a little.

Here is something still further in regard to the sulphur-aluminum mixture:

> Some time ago I read with interest your article. "Mend your own tinware." As I know how hard it is to mend aluminum I was anxious to learn more about solderine.
>
> The other day I found the enclosed clipping in an auto-supply catalog. I find that Reparall works about as you described solderine. One stick of this metal cost me 68 cents at the Western Auto Supply Co., Wichita.
>
> There is no name nor address of the manufacturers of it. Lloyd V. Decker.
>
> Hill Grove Farm, Wichita, Kan., June 26, 1922.

I have endeavored in the clipping below to give some of my own suggestions in brackets, as you will notice. Now, whether this sulphur-aluminum mixture will stand 600 degrees of heat or not I am unable to determine; and, what is still more important, will it last? Perhaps somebody will be able to inform me later on.

> REPARALL METAL.
>
> The Metalurgical Marvel
>
> Here is one of the greatest inventions in years for repairing cracks or breaks in any kind of metal—iron, bronze, brass, aluminum, copper, zinc, etc. Cracks in auto parts such as cylinder heads, crank cases, radiators, etc., which formerly had to be repaired by brazing or welding can now be repaired by anyone in a few minutes with Reparall Metal. To use simply heat the crack with a small torch to 250° (only a little above the boiling point of water) then rub a stick of Reparall Metal into the crack where it fluxates perfectly and practically becomes a *part of the metal*, regardless of the kind of material being repaired [not true]. The repair with this metal will then withstand 600° heat (much hotter than an automobile ever gets) and 1200 lbs. pressure which is more than ample. No acids or salts necessary; so

simple that anyone can use it. Articles can be mended from the bottom or sides as well as from the top because the heat will draw the Reparall Metal right into the crack [true, because it is sulphur, and not a metal]. Now used by thousands of garages and endorsed and used by the U. S. Government Aviation Repair Dept. on Airplane Motors. Fine for repairing most any sort of household utensils. An investment of 85c may save you as many dollars. Absolutely guaranteed. [*Guaranteed*, but by whom?] Shipping weight about 1 lb. Regular price $1.50. Our cash price per package, 85c.

The aluminum dust I have mentioned costs $1.00 a pound, and the sulphur 10 to 15 cents; so the mixture costs less than 75 cents a pound. Now, the little stick I bought on the fairground cost me 25 cents, and weighed only ¼ of an ounce, for both aluminum and sulphur are very light. How is that for profit—$1.00 an ounce for something that cost less than $1.00 a pound?

Blueberries in Florida.

(Continued from page 471, July issue.)

The writer of the above not only returned my dollar but he sent me three quite good-sized plants or trees as samples. These samples pleased me so well I sent the dollar back, and he replied as follows:

> Your letters and money received O. K. Many thanks for same. I live just one-fourth mile from Mr. M. A. Sapp. He is a good man and has been in the berry business for 20 or more years. He put out two acres of trees last week; all came from the woods. Blueberry trees respond to common fertilizer finely. Mr. Sapp raises quite a lot of truck between the rows in his young orchards. His last year's blueberry planting is in cabbage now ready for market and they surely are fine.
>
> I don't care to ship any more this season, but will be able to take care of all orders by Dec. 1, 1922. Any thing you may publish about what I have written is all right with me, for I believe you want to treat the people right. We have lots of low-bush blueberries also. They grow on upland. W. C. Carver.
>
> Rt. 1, Crestview, Fla., Mar. 10, 1922.

The two letters above would seem to indicate that no nurseryman in Florida sends out trees that are nursery-grown. The labels attached to the three plants mentioned were furnished by the Department of Agriculture, and they announced that these trees were free from inspection rules because they came direct from the forest. About the last of May Ernest and myself had the pleasure of visiting the writer of the above letters at the home of Mr. Sapp, mention of whom was made last fall, and going over his 20 acres of blueberry trees. I think I might call them trees, because the plantation was more like an orchard than a berry field. The blueberry bushes branch out much like my northern currants, but I think that some of them must be eight or ten feet high. Almost every little branch all over the twenty-acre orchard was bending with green berries; in fact, I never saw such a quantity of fruit on any tree or bush as I saw on those blueberries. It seemed to me as if some of them would have to drop off before maturity, for there was hardly room for the foliage. With much interest I visited the two acres just put out this past spring. The plants taken from the woods were cut square off at about three feet high so that they looked more like clubs than trees, and the roots were pruned in much the same way. I think they were set some eight or ten feet apart. They were planted about March 1, and in the 60 days almost every club or stub had started to grow. Some of them, I think, had made a growth of a foot, and not more than one in a hundred had entirely failed.

Now, Mr. Sapp's wonderful success, it seems to me, is due to at least three things: He has a wonderful soil; in fact, he grows vegetables between the rows when the trees are small. Then he has a wonderful plant for producing luscious berries; and, last of all, he is a wonderful man. I asked him if he had any boys so his success would not die when he did. I think he said he had three or four. Now I am interested in finding out whether the blueberry does as well in other places and grows as big as it does for Mr. Sapp. There is something peculiar about that locality, I feel sure, for I saw the most wonderful fig trees with a mass of foliage, covered with a luxuriant growth, and bearing annually great crops of fruit. I think some $30 to $40 worth of figs had been sold from a single tree in one season. In the vicinity of Crestview there are only two kinds of blueberries mentioned. The one that is such a success in bearing large fine berries is called the "Rabbitseye," as mentioned above. The other is a little black berry growing also in the woods; but the berries are small and have but little value compared with the large blueberries. While the New Jersey blueberries must have an acid soil this rule does not seem to apply, so far as I can learn, to the blueberries of Walton County, Fla. My good friend Carver has sent me a sample of the berries by express; but they were so very ripe that they were considerably mashed on the way; and while they compare well with our northern swamp-grown huckleberries, they were far from being equal to the improved *Jersey* berries. The latter have been improved by selection so that the seeds are so small that they are hardly noticed; whereas the Florida berries have quite a number of seeds large enough to be more or less objectionable. The Department of Agriculture has already made mention of Mr. Sapp's work in some of its bulletins.

PATENTS Practice in Patent Office and Court.
Pat. Counsel of The A. I. Root Co.
CHAS. J. WILLIAMSON,
McLachlan Bldg., Washington, D. C.

ROOT QUALITY BEES AND BEEKEEPERS' SUPPLIES.

Bees in the hive, in packages, and nuclei, three-banded leather-colored Italian queens. Let a beekeeper of long standing serve you in your requirements for 1922. Catalog on request.

O. G. RAWSON,
3208 Forest Place, East St. Louis, Illinois.

Classified Advertisements

Notices will be inserted in these classified columns for 50c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column, or we will not be responsible for errors. For special conditions on bee and queen advertising, please write us. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

Ward Lamkin, Joe C. Weaver, Hickory Shade Apiary, H. N. Boley, Prof. W. A. Matheny, E. J. Beridon, Jr., T. W. Livingston, Van's Honey Farm, Jensen's Apiaries, M. S. Nordan, J. I. Banks, D. A. Davis, I. F. Miller, Marugg Co., The Aladdin Co., Southland Apiaries.

HONEY AND WAX FOR SALE.

FOR SALE—Clover, amber and buckwheat honey, 60-lb. cans and 5 and 10 lb. pails. C. J. Baldridge, Kendaia, N. Y.

FOR SALE—25 tons fine extracted white clover honey at 12c. Comb honey prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

FOR SALE—White, amber and buckwheat honey, in 60-lb. cans and 5 and 10 lb. pails. Write for prices. E. L. Lane, Trumansburg, N. Y.

FOR SALE—Choice clover extracted honey, packed in new 60-lb. cans. Write for prices, stating quantity desired. J. D. Beals, Oto, Iowa.

FOR SALE—Choice new white clover honey in new 60-lb. cans, 120 lbs. net, $16.00. Sample, 20c. Edw. A. Winkler, Joliet, R. F. D. No. 1, Ill.

FOR SALE—Extracted white clover honey, 1922 crop, new tins, two 60-lb. cans to case, at $15.00 per case. J. G. Burtis, Marietta, N. Y.

FOR SALE—12,000 lbs. of choice white clover honey, well ripened, put up in new 5 and 10 lb. pails. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—A1 diamond clear extracted sweet clover honey, 10½c per lb., f. o. b. Moville, Iowa. In new 60-lb. cans. Virgil Weaver, Box 311, Moville, Iowa.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gal. barrels. Samples and price on request. A. I. Root Co., 23 Leonard St., New York City.

FOR SALE—White clover honey in 60-lb. cans and 5-lb. pails, this year's crop, none better. Write for prices. Sample, 10c. F. W. Summerfield, Waterville, Ohio.

FOR SALE—Several tons of dark and amber extracted honey for baking, etc., in barrels and 60-lb. cans; comb honey in season. H. G. Quirin, Bellevue, Ohio.

FOR SALE—50,000 lbs. extra fancy white clover honey. Price, one 60-lb. can, 16c a lb.; two 60-lb. cans, 15c a lb. Sample bottle by mail, 10c. J. M. Gingerich, Kalona, Iowa.

RASPBERRY HONEY—In 60-lb. cans, 2 in a case for $14.40; one in a case, $7.50. Sample by mail, 20c, which may be applied on order for honey. Elmer Hutchinson & Son, Lake City, Mich.

HONEY FOR SALE—In 60-lb. tins, water-white orange, 15c; white sage, 14c; extra L. A. sage, 12c; buckwheat, 10c, etc. Hoffman & Hauck, Woodhaven, N. Y.

OUR 1922 crop extracted honey is a very fancy grade, water white clover, which was left on the hives until thoroughly cured by the bees before extracting, making it very heavy bodied. This thick, rich honey is all packed in new 60-lb. cans, two to the case. Of course, we have to ask a little more for honey of this quality than ordinary honey. When in need of a good article, send a dime for a sample, and address your inquiry to D. R. Townsend, Northstar, Mich.

FOR SALE—We can supply honey to beekeepers or other roadside sellers who may need to buy beyond their own supply, packed as follows: 2½-lb. friction top tin cans, 2 doz. in case; 5-lb. friction top tin cans, 1 dozen in case; 10-lb. friction top tin cans, ½ doz. in case; 60-lb. square cans, 1 to case; 60-lb. square cans, 2 to case. We have the following kinds of honey: Standard white, alfalfa, sweet clover, California sage, California orange, light amber, amber. Write for prices. The A. I. Root Co., Medina, Ohio.

FOR SALE—Our 1922 crop of white clover extracted honey, put up in new 60-lb. cans and cases. Stored by the bees in nice new white combs, above excluders. The entire crop left upon the hives until some time after the close of the clover flow. By buying our honey you get our 47 years' experience in the production of honey. You may be able to buy cheaper honey, but what about quality? We are offering our new crop clover extracted honey as long as it lasts, at the following prices: One to five cases at 14c per pound, 5 cases or more, 13c per pound, on track here at Northstar. Address with remittance, E. D. Townsend & Sons, Northstar, Michigan.

HONEY AND WAX WANTED.

WANTED—Honey, section, bulk comb and extracted. Elton Warner, Asheville, N. C.

WANTED—Honey in ton lots, comb and extracted, of all kinds. Joe Mlinarits, 8927 Keller St., Detroit, Mich.

WANTED—Bulk comb and section honey. Correspondence solicited. J. E. Harris, Morristown, Tenn.

BEESWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

WANTED—Beeswax. We are paying 1c and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address so we can identify it immediately upon arrival, and make prompt remittance. The A. I. Root Co., Medina, Ohio.

FOR SALE.

HONEY LABELS—New design. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE—Good second-hand 60-lb. cans, two cans to case, boxed, at 60c per case, f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., Cincinnati, Ohio.

FOR SALE—About 35 cases, 70 cans, used 60-lb. cans in wood reshipping cases, 50c per case, f. o. b. New York City. E. A. Scott, 1057 Grand Concourse, New York City.

HONEY cans and pails; new sixties, 50 cases at 91c per case two cans. The Stover Apiaries, Mayhew, Miss.

FOR SALE—Five Townsend uncapping tanks. Price, complete, $27.50 each. The A. I. Root Co., Medina, Ohio.

FOR SALE—"SUPERIOR" FOUNDATION, "quality unexcelled." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

PORTER BEE-ESCAPES save honey, time and money. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

FOR SALE—Honey cans. 100 cans in cases, 2 5-gal. square cans to case, $1.00 per case. Used once. Good as new. L. N. Gravely, Ringgold, Va.

SEND for our bargain list of new bee supplies, hives, frames, bottoms, covers, sections, shipping cases, almost everything you want. Some at 50% discount. The Stover Apiaries, Mayhew, Miss.

WANTS AND EXCHANGE.

WANTED—Second-hand honey extractor. Miss Polly M. Scott, Upper Troy, N. Y.

ROYAL typewriter, $65.00. Will trade for honey, queens or offer. E. A. Harris, Albany, Ala.

WANTED—Small second-hand honey extractor. C. B. Thwing, 45 W. Tulpehocken St., Philadelphia, Pa.

WANTED—One hand, one power honey extractor, and other bee equipment. Ed Mrovka, Collinsville, Ill.

WANTED—Italian bees in Standard hives, 10-frame, on good 80 acres of land. M. B. Lund, Henning, Minn.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa, Council Bluffs, Iowa.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

BEESWAX WANTED—We need large quantities of beeswax and are paying good prices now. Ship to us at Hamilton, Ill., or Keokuk, Iowa, or drop us a card and we will quote f. o. b. here or f. o. b. your own station, as you may desire. Dadant & Sons, Hamilton, Ill.

OLD COMBS WANTED—Our steam waxpresses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1922 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Son, Hamilton, Ill.

BEES AND QUEENS.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

WHEN it's GOLDEN, it's PHELPS. C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

SEE Thagard's latest reduced prices on queens in ad elsewhere.

REQUEEN with SIMMONS' QUEENS. Prices reduced. Fairmount Apiary, Livingston, N. Y.

SPECIAL prices on queens. See my ad page 555. Frank Bornhoffer, Mt. Washington, Ohio.

TRY ACHORD'S BEES and QUEENS. Price list by return mail. W. D. Achord, Fitzpatrick, Ala.

FOR SALE—20 colonies Italians. Write for particulars at once. J. B. Scudder, Trenton, R. D. No. 6, N. J.

WHEN it's quality, service and satisfaction you want to try Pinard. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR SALE—Three-banded Italian queens. Tested, after June 15, $2.00 each. J. D. Kroha, 87 North St., Danbury, Conn.

AM now ready to send queens by return mail. Dr. Miller's strain, $1.00 each. S. G. Crocker, Jr., Roland Park, Baltimore, Md.

3-BANDED ITALIAN QUEENS. Untested, 90c each; tested, $1.40 each; satisfaction and no disease guaranteed. J. J. Scott, Crowville, La.

PHELPS GOLDEN QUEENS will please you. Mated, $2.00; 6, $10.00; or $18.00 a doz. C. W. Phelps & Son, Binghamton, N. Y.

TWO-POUND package bees with untested Itallian queen, $5.00; 3 lbs., $7.00. Safe delivery guaranteed. C. H. Cobb, Belleville, Ark.

PRITCHARD QUEENS are the result of years of careful breeding and selection. See ad page 554. Arlie Pritchard, Medina, Ohio.

FOR SALE—Bright Italian queens, 1, $1.00; 12, $10.00; 100, $75.00. Safe arrival guaranteed. T. J. Talley, Greenville, R. D. No. 3, Ala.

PACKAGE BEES—$1.50 per pound. Untested Italian or Carniolan queens, $1.25 each. Circular free. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

FOR SALE—Golden Italian queens, 1 untested, $1.00; 6 for $5.00; tested, $2.00; hybrids, 3 for $1.00. J. F. Michael, Winchester, R. D. No. 1, Ind.

TRY our northern-bred leather-colored Italian queens for European foul brood at $1.25 each; 6, $7.00; 12, $13.50. Charles Stewart, Johnstown, N. Y.

FOR SALE—July 1, Buck Goldens. 1 queen, $1.00; 6 queens, $5.00; 12 queens, $10.00; virgins, 40c. W. W. Talley, R. D. No. 4, Greenville, Ala.

FOR SALE—Early package bees, nuclei and queens. We handle 1800 colonies. Shipping season March 1 to June 1. Loveitt Honey Co., Phoenix, Ariz.

SELECT DAY-OLD QUEENS, 10, $4.00, in Thompson safety cages; Benton, 5c less. Untested, $1.25. Superior Italian stock. James McKee, Riverside, Calif.

DEPENDABLE QUEENS—Golden or three-banded: 1, $1.25; 6, $7.00: 12, $13. Safe arrival and satisfaction guaranteed. Send for circular. Ross B. Scott, La Grange, Ind.

BIG SAVING on select three-banded Italian queens, gentle, prolific and hustlers. Second to none. One, 85c; 6 for $4.25; 12, $8.00. Ship all orders within 24 hours. J. L. Morgan, Gen. Mgr. Tupelo Honey Co., Columbia, Ala.

FOR SALE—Italian queen untested. $1.25 each; 6 for $7.00; 12 for $13.50; tested, $2.00 each. Bees by the pound shipped by express, one-pound package with queen, $3.75; two-pound package with queen, $5.75; three-pound package with queen, $7.50 Safe delivery and satisfaction guaranteed. R. B. Grout Jamaica, Vt.

FOR SALE—Three-banded Italian queens, untested, $1.00 each; 6, $5.50. Ready now. Satisfaction guaranteed. Chas. W. Zweily, Willow Springs, Ill.

FOR SALE—My 1922 golden queens, the big yellow kind, none better. Satisfaction guaranteed. Price 90c each, or $9.00 per dozen. E. F. Day, Honoraville, Ala.

QUEENS—For summer and fall. Write for prices and guarantee, state quantity desired and when shipment wanted. I can fill your orders. J. L. St. Romain, Hamburg, La.

WE ARE booking orders now for spring delivery for the famous "Colorado Queens." Send your order early so as to be sure to get your queens. C. I. Goodrich, Wheatridge, Colo.

ELTON WARNER'S QUALITY QUEENS—Progeny of his famous Porto Rican breeding stock. Write for price list. 20% off after June 30. Elton Warner Apiaries, Asheville, N. C.

FOR SALE—Three-band Italian queens, select untested, $1.00 each; $9.00 per doz. 2-lb. package with queen, $5.00. Satisfaction guaranteed. W. T. Perdue & Sons, Fort Deposit, Ala.

BEES BY THE POUND — Also QUEENS. Booking orders now. FREE circulars, giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas. E. B. Ault, Prop.

TRY MY CAUCASIAN OR ITALIAN three-frame nuclei at $5.00 each, with untested queen. Tested, $1.50; untested, $1.00, of either kind. No disease. Peter Schaffhauser, Havelock, N. Car.

FOR SALE—Golden Italian queen, untested, $1.00; 6 for $5.40; 12 or more, 80c each; tested, $1.50 each; select tested, $2.50 each. Safe arrival guaranteed. Sam Hinshaw, Randleman, N. C.

GOLDEN QUEENS that produce large beautiful bees, solid yellow to tip, very gentle and prolific. Untested, $1.25 each; select tested, $3.00 each; breeders, tested, $5.00. Dr. White Bee Co., Sandia, Texas.

FOR SALE—Leather-colored Italian queens, tested, until June 1, $2.50, after $2.00. Untested, $1.25; 12, $13.00. ROOT'S GOODS, ROOT'S PRICES. A. W. Yates, 15 Chapman St., Hartford, Conn.

WARRANTED PURE-MATED Italian queens in special sure introducing cages; first order, $1.25 each. 30 years' experience in queen-rearing. No honey in queen candy. Daniel Danielson, Brush, Colo.

YOUR last chance this year to get the best queens obtainable. Our new method produces queens equalled by none. Circular free. Untested, $1.00; tested, $2.00. F. M. Russell, Roxbury, Ohio.

FOR SALE—Three-banded Italian queens, untested, 1, $1.00; 12, $9.00; 100, $70.00. Tested, 1, $1.50; 12, $16.00. No disease, safe arrival, satisfaction and purely mated. W. C. Smith & Co., Calhoun, Ala.

FOR SALE—350 colonies of bees with complete extracting equipment, including power extractor, steam boiler, and auto truck, with or without 1922 crop. Scott McClanahan, Parma, R. D. No. 1, Idaho.

POOLE'S Italian queens will please you. Give me a trial and be convinced. I guarantee safe arrival and satisfaction. Untested, 85c each; 12 or more, 75c each; tested, $2.00 each. Rufus Poole, Greenville, Ala.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, $1.00 each; $10.00 per dozen; $75 per 100. Pure mating, safe arrival and satisfaction guaranteed.

"SHE-SUITS-ME" queens, line bred Italians, $1.50 each; 10 to 24, $1.30 each. See back cover of January number. Allen Latham, Norwichtown, Conn.

COLORADO HEADQUARTERS for QUEENS—Northern-bred leather-colored three-band Italians. Safe arrival guaranteed. Send for circular and price list. Loveland Honey & Mercantile Co., Loveland, Colo.

FOR SALE—Pinard's quality of Root's strain of bees and queens. Virgins, 50c. Untested queens, $1.25 each. Larger lots write. Circular free. After July 1, 10% discount. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR SALE—Golden Italian queens, untested, $1.00; 6 for $5.40; 12 or more, 80c each; tested, $1.40 each. Good honey-gatherers, hardy and gentle. No disease. Safe arrival. Hazel V. Bonkemeyer, Randleman, R. D. No. 2, N. C.

FOR SALE—Some 65 colonies of bees in 10-frame hives with complete equipment, plenty of extra brood-frames and super combs. No disease. Very reasonable. Will Loge, R. F. D. No. 1, Box No. 357, Milwaukee, Sta. D., Wisc.

BRIGHT ITALIAN QUEENS, $1.00 each, 10% less in dozen lots. Pure mating, safe arrival and reasonable satisfaction guaranteed in U. S. and Canada. Write us for prices on package bees. We have them in season. Graydon Bros., Rt. 4, Greenville, Ala.

HEAD your colonies with Williams' Italian queens of quality and get more pleasure and profit from your bees. They produce bees that are gentle, hardy and hustling. Descriptive circular free. Select untested, 75c each. P. M. Williams, Ft. Deposit, Ala.

SPICER'S three-band Italian queens by return mail. If you are interested in improving your stock and getting larger returns from your bees, head your colonies with these queens. Untested, $1.00; 6, $5.50; 12, $10.00; tested, $2.00 each. Robt. B. Spicer, Wharton, N. J.

FOR SALE—DEPENDABLE GOLDEN ITALIAN QUEENS add beauty to your bee quality. Virgins, 60c; 5 for $2.50; untested, $1.00; 6 for $5.00; select untested, $1.50; 6 for $6.50; tested, $2.50; 5 for $10.00; selected, $3.00; breeders, $5.00. Safe arrival and quality guaranteed. S. H. Hailey, Pinson, Tenn.

BALANCE of season we will furnish a 2-lb. package of our three-banded hustlers with a select untested queen for $4.75; 25 or more, $4.50 each. Select untested queens from our best breeders, $1.00 each; $10.00 per doz. Tested, $1.50 each; $15.00 per doz. Caney Valley Apiaries. J. D. Yancey, Mgr., Bay City, Texas.

FOR SALE—Golden Italian queens and bees, untested, 1 queen, $1.00; 1 dozen, $10.00; 100, $75.00. 2-lb. package with queen, $5.00; 1-lb. package with queen, $3.00; 12 or more, 5% off. 2-frame nucleus with queen, $5.00; 15 or more, 5% off. Safe arrival and satisfaction guaranteed. J. F. Rogers, Greenville, R. D. No. 3, Ala.

CONNECTICUT QUEENS, highest grade three-banded Italians. Untested, $1.00 each; 6, $5.50; 12, $10; 50, $40; 100, $75. Two lbs. of bees with queens, $4.00; 3 lbs. with queen, $6.00. Day-old virgin queens, 40c each; 3 for $1.00. First-class stock and satisfaction guaranteed. No disease here. Conn Valley Apiaries, A. E. Crandall, Berlin, Conn.

FOR SALE—Golden Italian queens — good queens at low price. Untested, $1.00; 6 for $5.40; 12 or more, 80c each; tested, $1.50 each; select tested, $2.50 each. No disease of any kind. Bees very gentle and good honey-gatherers, not apt to swarm unless crowded for room. 18 years a queen-breeder. D. T. Gaster, Randleman, R. D. No. 2, N. C.

SPECIAL REDUCED PRICES on Italian queens for August and September. Untested, 1, $1.00; 6, $5.75; 12, $11.00; 50, $45.00; 100, $85.00. Tested, 1, $2.00; 6, $11.00. The place where you get the best. J. D. Harrah, R. F. D., No. 1, Freewater, Oregon.

FOR SALE—40 colonies of Italian bees in 8-frame Jumbo hives, all in good condition, no disease. Also 3-4 supers to each with good drawn frames, at very low price. Have to move same this fall. R. A. Rojahn, 1050 Desplaines Ave., Forest Park, Ill.

TESTED QUEENS—One-year-old tested three-banded Italian queens, descended from the famous Moore strain. Were reared in full colonies and are very fine queens. Price, $1.50 each; 6 for $8.50; 12 for $16.00. Safe arrival and satisfaction guaranteed. Elmer Hutchinson & Son, Lake City, Mich.

GOLDEN ITALIAN QUEENS—Bred from finest strain in U. S. Mated to select drones. THEY POSSESS THE QUALITIES WHICH MAKE BEEKEEPING PROFITABLE. Untested, 75c; dozen, $7.50; virgins, 25c; tested, $1.50. Safe arrival and satisfaction guaranteed. Crenshaw County Apiary, Rutledge, Ala.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness and perfect markings. Price, $1.25 each, 12, $1.00 each. Special prices on larger orders. Send for circulars. J. H. Haughey Co., Berrien Springs, Mich.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you want. They are GREAT HONEY-GATHERERS, BEAUTIFUL and GENTLE. Virgins, $1.00; mated, $2.00; 6 for $10.00, or $18.00 per doz; tested, $5.00. Breeders, $10.00 to $20. Safe arrival guaranteed only in the U. S. and Canada. C. W. Phelps & Son, Binghamton, N. Y.

HOLLOPETER'S ITALIAN QUEENS are bred up to a standard and not down to a price, yet price is low where quality and service count. Select untested each, $1.25; 6, $7.00; 12, $13.00; 25, $25.00. Write for mailing date and price on larger lots for requeening. Pure mating, no disease, safe arrival and satisfaction guaranteed. J. B. Hollopeter, Rockton, Pa.

FOR SALE—170 colonies of high-class Italian bees in modern 10-frame L. hives, painted, full sheets, wired. About 50 colonies in Jumbo hives, all first-class equipment for comb, extracted honey and queen-rearing. Four-colony winter cases. Clover-basswood location. Fine home market. Information on request. Come and see. E. L. Hall, 1706 Forres Ave., St. Joseph, Mich.

I EXPECT to be ready to start shipping 3-lb. packages of bees with 1 frame, 1 untested queen at $6.00; 2-frame nuclei with untested queen, $4.50, about April 15. Young tested queen, 50c extra, or $1.50 each. I think I was the second to ship packages of bees from this state and know how to serve customers. F. M. Morgan, Hamburg, La.

CALIFORNIA QUEENS—100% perfect, large vigorous Italians, guaranteed layers. They are making a hit as proven by repeated orders and letters of appreciation. Am building a name and reputation. Try at least one. You will surely want more then. Price reduced. Select untested, 1, $1.00; 6, $5.50; 25, 90c each. H. Peterman, R. F. D., Lathrop, Calif.

LARGE, HARDY, PROLIFIC QUEENS—Three-band Italians and Goldens. Pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. Prices as follows: Untested, $1.25 each; 6 for $7.00; select untested, $1.50 each; 6 for $8.50; select tested, $3.00 each. Special prices on larger quantities. Queens clipped free on request. Health certificate with each shipment. Buckeye Queens, Zoarville, Ohio.

LAST fall I had selected and tested six queens. Will use them as breeders this season in my queen yard. Their surplus honey capacity is from 216 lbs. to 288 lbs. each. I guarantee that every queen bought of me in 1922 is to be the daughter of one of these queens. Bees are three-banded. Mated, in June, $1.25 each; 6, $7.00; 12, $13.50; 25 or more, $1.00 each. After July 1, $1.00 each straight. Julius Victor, Martinsville, N. Y.

FOR SALE—250 to 350 colonies of fine Italian bees on good straight L combs with a full equipment of supplies for extracted-honey production. Also 47 acres land in Harrison County, Iowa, near town; has about 20 acres fine natural basswood grove. Has good improvements, especially for beekeeping. Probably as good an equipment as there is in the state. This is a good paying business, with outyards already established, everything complete. Can give long time on part of the price, but would require $8000 or $9000 to swing it. Any one having that much capital to invest in a dandy country home and a paying business, will find it by addressing E. S. Miles & Son, Dunlap, Iowa.

3-BANDED (Dr. Miller and my own stock) queens for fall requeening at a bargain in 100 lots. Ask these men, any one of them, or all of them: Such as Amos Burhans, Waterloo, Ia.; Porter C. Ward, Allensville, Ky.; Ed Bradley, Trenton, Ky.; B. I. Blankenship, Crab Orchard, Ky.; R. N. Wood, Winton, Calif.; F. A. James, Clover Seed Co., Newbern, Ala.; Dadant & Sons, C. H. W. Weber & Co., with many others; yes, and Mr. Stephen J. Harmeling & Son, Vashon, Wash. 1 queen, $1; 6 for $5.50; 12 for $10. Health certificate, pure mating and safe arrival guaranteed. Curd Walker, Scotts Sta., Ala.

$200.00 FOR ONE QUEEN. This is what we value her at, although she is not for sale at any price. This is the queen that produced 577 sections of comb honey for C. B. Hamilton of Michigan last year, beginning the season with a two-pound package of bees (see Gleanings for March page 167; also July, 435). We are now filling orders for young queens raised from this wonderful queen at the following prices: 1 untested, $1.25; 12, $12.00; 1 select untested, $1.50; 12, $15.00; 1 tested, $2.00; 12, $20.00; 1 select tested, $2.50; 12, $25.00. Queens from other breeders, 1 untested, $1.00; 12, $10.00; 1 select untested, $1.25; 12, $13.50; 1 tested, $1.75; 12, $16.00; 1 select tested, $2.25; 12, $20.00. Safe arrival and satisfaction guaranteed. Write for prices on quantities. No disease. J. M. Cutts & Son, R. D. No. 1, Montgomery, Ala.

MISCELLANEOUS.

MEDICINAL roots and herbs are very profitable to grow. We especially recommend growing Golden Seal which with good care will yield as high as $10,000 per acre for each crop. It takes several years to mature but will average $1000 a year. Special Crops, a monthly paper, tells how. Sample copy, 10c. $1.00 per year. Address Special Crops Pub. Co., Box "G," Skaneateles, N. Y.

HELP WANTED.

WANTED—Situation by experienced florist and beekeeper as assistant, any reasonable salary. California or South preferred. Wm. Robinson, Winona Lake, Box 70, Indiana.

MASON BEE SUPPLY COMPANY,
Mechanic Falls, Maine.
From 1897 to 1922 the Northeastern Branch of The A. I. Root Company.
PROMPT AND EFFICIENT SERVICE
BECAUSE—Only Root's Goods are sold.
It is a business with us—not a side line.
Eight mails daily—Two lines of railway.
If you have not received 1922 catalog send name at once.

Requeen Now If You Can!

Right now is the time to begin your plans for securing the maximum crop of honey next season.

Requeening with young, prolific queens of a known, honey-gathering strain is one of the most important factors in being a successful honey producer. Young, prolific queens introduced now will mean two things: First, strong colonies to go into winter quarters. Second, strong colonies to gather next season's crop of honey.

For more than 50 years we have been breeding up to the Root Quality Queens and Bees. We do not believe that better bees or queens are reared anywhere in the world today. What we try to do, is to rear THE BEST.

We breed queens with special view to the honey-gathering quality of their bees. We have had this one chief purpose in breeding constantly in mind all these years. We have it uppermost in our minds today.

THE DIFFERENT GRADES OF QUEENS.

Italian queens are distinguished from blacks by three yellow bands on the upper part of the abdomen. Leather-colored Italians show three stripes of dark-yellow leather color.

An untested queen is one which is sold after she is found to be laying, not having been previously tested.

A tested leather-colored queen is one which has been examined by the breeder and her bees found to be uniformly marked with at least three dark-yellow bands.

Select queens of any of the grades are those which show better color, size, shape, etc. Frequently select untested queens develop into fine breeding queens.

PRICE OF QUEENS—Up to October 1.

	1 to 9.	10 to 24.	25 to 49	50 to 99.	100 or more.
C312000—Untested	$1.50 each.	$1.40 each.	$1.35 each.	$1.25 each.	$1.15 each.
C313000—Select Untested	2.00 each.	1.90 each.	1.80 each.	1.70 each.	1.60 each.
C314000—Tested	2.50 each.	2.35 each.	2.25 each.	2.10 each.	2.00 each.
C315000—Select Tested	3.00 each.	2.85 each.	2.70 each.	2.25 each.	2.40 each.

Note the large saving to be made by taking advantage of our low prices on quantity lots.

OUR GUARANTEE ON QUEENS.—We guarantee safe arrival of queens sent in mailing cages. We agree to refund the money or replace the queen if the one first sent arrives dead; provided the beekeeper receiving the dead or unfit queen returns her at once and in her own shipping cage, properly marked with name and address of sender. No delay in returning the queen can be permitted. This guarantee applies only on queens sent to customers in the United States and Canada.

PRICES OF BEES IN COMBLESS PACKAGES BY EXPRESS. Up to August 15.

C310700—1-pound package	$3.00;	25 or more packages, $2.85 each.
C310800—2-pound package	5.00;	25 or more packages, 4.75 each.
C310801—3-pound package	7.00;	25 or more packages, 6.60 each.

Add price of queen wanted to package price given above.

OUR GUARANTEE ON BEES SHIPPED BY EXPRESS.—We agree to make good any loss to bees in transit, provided consignee secures such notation as will cover any apparent damage done while in transit, on express delivery receipt, signed in full by express agent, **receipt to be mailed to us at once** with letter giving full particulars, on receipt of which replacement will be made immediately. **The guarantee does not apply on bees shipped to foreign countries.**

Mail all queen and bee orders direct to Medina or to our nearest branch office.

THE A. I. ROOT COMPANY

WEST SIDE STATION MEDINA, OHIO, U. S. A.

Requeen Now!

While you can get good queens cheap. L. L. Forehand's Queens are backed by twenty years of careful selecting and breeding. They are bred from the imported stock direct from Italy, the best in the world for honey-gathering, disease-resisting, prolificness, gentleness and non-swarming.

Give my queens a trial, and, if you are not entirely satisfied in every way, your money will be refunded.

Guarantee

I guarantee every queen will reach you alive, to be in good condition, that she will be purely mated and give perfect satisfaction in every way. Safe delivery guaranteed in U. S. and Canada only.

	1	6	12
Untested	$0.75	$ 4.40	$ 8.60
In hundred lots, $67.00 per 100.			
Selected Untested	1.10	6.25	12.00
Tested	2.00	10.00	18.50
Selected Tested	2.75	15.00	27.00

If queens are wanted in larger quantities, write for special prices.

L. L. Forehand, Fort Deposit, Ala.

Prices for the Remainder of the Season

QUEENS

1 to 4 inclusive. $2.00 each

5 to 9 inclusive. $1.95 each

10 or more. $1.90 each

Breeders. $10.00 each

Introducing Cages. 75c each

JAY SMITH

ROUTE THREE. VINCENNES, INDIANA

PATENTS---TRADEMARKS

I offer prompt, personal and expert professional service. 10 years' experience. Write for terms. **LESTER SARGENT, Patent Attorney, 524 Tenth St., N. W., Washington, D. C.**

Queens - Golden - Queens

Have you secured all you need? I have them as fine as you can secure anywhere at a reasonable price. Untested, $1.00; six, $5.50; 12, $10. If they don't give you satisfaction and you write me, I will make it satisfactory to you.

E. A. SIMMONS, GREENVILLE, ALA.

QUEENS — QUEENS

LARGE, leather-colored 3-banded Italian queens; 10-years selection, bred for honey-gathering; gentle, hardy and long-lived. Price: Select untested, 1, $1.25; 6, $6.50; 12, $12. After July 1: 1, $1; 6, $5; tested, $1.50 each. Write for price on large orders. Free booklet, ''How to Transfer. Get Honey and Increase.''

J. M. GINGERICH, KALONA, IOWA.

"Best" Hand Lantern

A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. **Agents wanted. Big Profits. Write for Catalog.** THE BEST LIGHT CO. 306 E. 5th St., Canton, O.

REDUCED PRICES

Beginning July 1st, we will sell queens the balance of the season at the following prices:

Untested: One to 9, 90c each; 10 to 19, 80c each; 20 or more, 75c each. Tested: $1.25 each. Three-banded Italians.

There are no better queens than these. They have again led the country in the amount of surplus honey stored.

MURRY & BROWN,
Mathis, Texas.

Send orders to H. D. Murry, Mathis, Texas.

MOTT'S NORTHERN-BRED ITALIAN QUEENS

Are all selected queens this season. After July 1st, $1.00 each. Sel. Guaranteed pure mated, or replace free, $1.50. Sel. Tested, $2.50. Virgins, 60c each. Plans, "How to Introduce Queens" and "Increase," 25c.

E. E. MOTT, GLENWOOD, MICH.

Would exchange some of our queens for supplies for next year's supply. We need 10,000 queen cages, three-hole complete without candy, 1000 metal spaced Hoffman frames, 50 double-walled hives, 50 single-walled hives, 100 metal covered tops, 200 inner covers without bee-escape hole, 150 lbs. medium brood foundation. Everything must be new and in the flat and in ten-frame standard equipment. Write and tell us what you have to offer.

W. G. Lauver, Middletown, Pa.

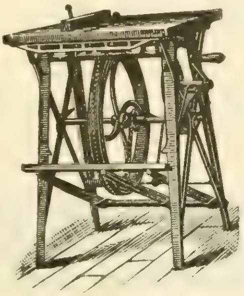
A-T-T-E-N-T-I-O-N!

OHIO AND WEST VIRGINIA BEEKEEPERS

We are most favorably located for serving Central, Southern and Eastern Ohio, and also West Virginia. No matter where you are, full stocks, best shipping facilities and prompt attention will insure satisfaction. Free catalog.

MOORE & PEIRCE
Zanesville, Ohio—"Beedom's Capital."

BARNES' HAND & FOOT POWER MACHINERY



This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial

Send for illustrated catalog and prices.

W. F. & JOHN BARNES CO.
545 Ruby Street
ROCKFORD, ILLINOIS.

NEWMAN'S QUEENS

Originated from the world-famous Moore strain of Italians. Absolutely first quality and fully guaranteed, no disease. Satisfaction and safe arrival.

Untested: 1, $1.25; 6, $6.00; 12, $11.00.
Sel. Unt.: 1, $1.75; 6, $8.00; 12, $15.00.

Circular free.

A. H. NEWMAN, Queen-Breeder.
Morgan, Kentucky.

Merrill's Quality-Bred Italian Queens

Famous Three-banded and Golden Queens.

They are pleasing others; why not you? I sell good queens for less. Try them and see for yourself.

1 Untested Queen	$0.75
6 Untested Queens	4.00
12 Untested Queens	8.00

These are selected queens, mated, and laying. Guaranteed to please you.

G. H. Merrill

Route 5. GREENVILLE, S. C.

Goldens the Best

14 years in business should give you best queens possible. Untested, $1, or 6 for $5; in lots of 25 or more, 75c each. Virgins, 40c each, or 3 for $1. Satisfaction and promptness my motto.

R. O. COX, Box 25, RUTLEDGE, ALABAMA.

NEW ENGLAND

Beekeepers will find a complete line of the best supplies here. Send in your order early and be ready for the harvest. Remember this is the shipping center of New England. Write for new catalog.

H. H. JEPSON

182 Friend Street. BOSTON 14, MASS.

Let us tell you about the California Gold Medal Queens

The Queens with the Pedigree.

Our hardy, immune, prolific strain of 3-banded leather-colored Italians. Developed from the world's best strains by careful selection and tested under California conditions for five years, with excellent results. My speciality will be breeding stock and every queen produced will receive my personal care and inspection. Now receiving orders for the season of 1922, which will be filled in the order of their receipt. Write for catalog and prices.

THE COLEMAN APIARIES

GEO. A. COLEMAN, Prop.
2649 Russell St., Berkeley, California.

INDIANOLA APIARY offers Italian Bees and Queens for following prices: Untested Queens, $1.00 each; Tested Queens, $1.50 each. Bees, per lb., $2.00. Nucleus, $2.00 per frame. No disease. Bees inspected.

J. W. SHERMAN,
Valdosta, Georgia.

3-Band Queens

That have cut down the cost of advertising, because they prove to our customers that they represent the BEST. That's why we can sell them at such low prices. Every queen guaranteed.

Untested, $1.00; $11.40 doz.; 25, 90c each.
Select Unt., $1.25; 13.50 doz.; 25, $1 each.
Select Tested, $2.25; $24.00 doz.

HERMAN McCONNELL
Robinson, Illinois.

—QUEENS OF—

MOORE'S STRAIN

OF ITALIANS PRODUCE WORKERS

That fill the supers quick
With honey nice and thick.

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc. I am now filling orders by return mail. Untested queens $1.25; 6, $6.50; 12, $12. Select Untested, $1.50; 6, $8.00; 12, $15. Safe arrival and satisfaction guaranteed.

J. P. MOORE, Queen Breeder
Route 1, MORGAN, Kentucky.

75c EACH

One or more SELECT Untested Three-Banded Italian Queens. No poor-appearing queen will be sent. A satisfactory sale guaranteed. No disease.

D. W. HOWELL, SHELLMAN, GEORGIA.

QUEENS

OUR OLD RELIABLE THREE-BANDED ITALIANS ARE HONEY GETTERS.

They are gentle, prolific, and very resistant to foul brood. Orders booked for one-fourth cash. Safe arrival guaranteed. Circular free.

PRICES

	1	6	12
Untested	$1.00	$5.50	$10.00
Select Untested	1.25	6.50	12.50
Tested	2.25	12.50	24.00
Select Tested			$3.00 each

See our Dec. and Jan. Advertisement.

JOHN G. MILLER

723 C Street, Corpus Christi, Texas.

QUIGLEY QUALITY

Italian Queens and Bees are produced by double grafting, producing queens of superior quality and long-lived bees, filling your big hives with bees. Hustlers, hardy, wintering on summer stands. No disease; 36 years in this location. Purity and satisfaction guaranteed.

Untested—Each, $1.25; 6 for $7.00; 12 for $12.00. Select Untested, add 50c each extra. Tested, $2.00 each.

Send for circular.

E. F. QUIGLEY & SON
UNIONVILLE, MISSOURI.

ATTENTION, PRODUCERS! NEW HONEY CROP

We are ready to receive your new crop advices, sending us samples and state price wanted, how packed, and quantity can ship. Terms, cash on arrival.

HOFFMAN & HAUCK, INC., WOODHAVEN NEW YORK

BANKING BY MAIL AT 4%

A.T.Spitzer
PRES.

E.R.Root
VICE PRES.

E.B.Spitzer
CASHIER

No Matter Where You Live

you can send your money to us and have it under your own control, earning 4% interest, in absolute safety. Ask us to send you our "Banking by Mail" booklet.

The SAVINGS DEPOSIT BANK CO.
THE HOME OF THE HONEY-BEE MEDINA, OHIO

Lockhart's Silver-gray Carniolans

"LINE BRED" for the past 34 years. They are VERY hardy, gentle, prolific, great workers, and builders of VERY WHITE comb, and use mostly wax in place of propolis. Prices of queens for 1922: Untested queens, $1.00; select untested, $1.50; tested, $2.00; select tested, $3.00. Breeders, $5.00, $10.00. Safe arrival guaranteed in U. S. and Canada. No foul brood here.

F. A. LOCKHART & COMPANY, LAKE GEORGE, NEW YORK

HONEY We are in excellent position to serve beekeepers who do not produce enough Honey to supply their trade. We have a big stock of fine table honey of various grades always on hand. **In 60-lb. Tins Crystallized—Water White Orange, 15c; White Sage, 14c; Extra L. A. Sage, 12c; Buckwheat, 10c.**

GLASS AND TIN HONEY CONTAINERS.

2½-pound cans....Crates of 100, $4.50
5-lb. pails (with handles), 1 dozen reshipping cases....$1.00 case; crates of 100, $7.00
10-lb. pails (with handles)....Crates of 50, $5.25
60-lb. tins, 2 per case....New, $1.20 case; used, 25c

White Flint Glass, with Gold Lacquered Wax Lined Caps.
8-oz. honey capacity..$1.50 per carton of 3 doz.
16-oz. honey capacity..$1.20 per carton of 2 doz.
Qt. 3-lb. honey capacity. 90c per carton of 1 doz.

HOFFMAN & HAUCK, Inc.
WOODHAVEN, NEW YORK.

CENTRALLY LOCATED TO SERVE NEW ENGLAND BEEKEEPERS.

Root QUALITY BEE SUPPLIES

ORDERS FILLED PROMPTLY.
—
CATALOG ON REQUEST.

F. COOMBS & SONS, BRATTLEBORO, VERMONT

DON'T DELAY---GET OUR PRICES

WE SAVE YOU MONEY

"Falcon"

SUPPLIES --- QUEENS --- FOUNDATION

W. T. FALCONER MFG. COMPANY
FALCONER (Near Jamestown) NEW YORK
"Where the best beehives come from."

Queens Queens

Knight's Three-Banded

Give them a trial and be added to my book of satisfied customers.

Prices for Balance of Season.

1 Select Untested	$1.00
5 Select Untested	4.75
10 Select Untested	8.50
Tested Queens, each	2.00

For large quantities write for prices. Have the bees, men and equipment to handle rush orders by return mail. Pure mating and satisfaction guaranteed. It is left with customer to say what is satisfaction. No disease.

JASPER KNIGHT
HAYNEVILLE - - ALABAMA

Leininger's Strain of ITALIANS

have been carefully bred for the last 35 years. As to gentleness and honey-gathering qualities they are unsurpassed. We will offer for sale 200 tested queens, during August at $1.50 each; 6 or more, $1.25 each; these are queens from our best stock and will give entire satisfaction.

FRED LEININGER & SON
DELPHOS, OHIO.

Bee Supplies

SPECIAL PRICES ON THE FOLLOWING NO. 2 SECTIONS.

100,000 4¼x4¼x1½ Plain at $7.00 per 1000
50,000 4¼x4¼x1¾ Two-beeway at $8.00 per 1000

The above are all packed 500 to a crate.

REDUCED PRICES ON TIN AND GLASS HONEY CONTAINERS.

Send us a list of your requirements of containers, and we will make you prices that will save you money.

We can make shipment the same day order is received.

We carry a complete line of EVERYTHING FOR THE BEEKEEPER, and can make prompt shipment. Write for our catalog.

A. H. RUSCH & SON CO.
REEDSVILLE, WISCONSIN.

QUEENS

ITALIANS - CARNIOLANS - GOLDENS

We ship thousands of queens and thousands of pounds of bees all over the United States and Canada every year.

2-comb regular Nuclei, no extra bees	$3.75
3-comb regular Nuclei, no extra bees	5.25
2-comb regular Nuclei with 1 pound extra bees	5.25
1-comb regular Nuclei with 2 pounds extra bees	5.25
1-lb. pkg. bees, $2.25 ea.; 25 or more	2.15
2-lb. pg. bees, $3.75 ea.; 25 or more	3.60
3-lb. pkg. bees, 5.25 ea.; 25 or more	5.00

QUEEN FREE with all of the above packages except 1-pound size; will furnish them at half price with these.

PRICES OF QUEENS ONLY.

1 Untested Queen, $1.05 each; 25 or more, 91c each; per 100	$85.00
1 Select Untested, $1.19 each; 25 or more, $1.05 each; per 100	95.00
1 Tested Queen, $1.57; 25 or more, each	1.40
1 Select Tested Queen, $1.85 each; 25 or more, each	1.57
Breeders, each ....$5.00, $10,00 and	15.00

Send for FREE circular.

NUECES COUNTY APIARIES, Calallen, Texas
E. B. AULT, Prop.

Requeen With

Forehand's 3-Bands

They Satisfy; Why?

Because they are guaranteed to be as good as money can buy. Not a cheap queen but a queen of the best at a cheap price. Every queen guaranteed to reach destination in first-class condition, to be purely mated and give perfect satisfaction or money back. Orders filled by return mail.

Untested, 1 to 25, 90c each; 25 to 50, 80c each; 50 to 100, 75c each. Select Untested, $1 each. Tested, $1.75 each.

Better Queens for Less Money

N. FOREHAND, RAMER, ALA.

SCOTT QUEENS ARE GOOD QUEENS

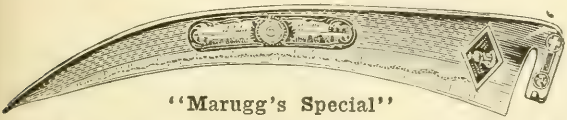
MY QUEENS ARE GETTING RESULTS.

Among my hundreds of colonies and for my customers. One writes: ''Dear Mr. Scott: Please book me for ½ doz. queens. Those I got from you last season have made 150 lbs. comb honey each so far this season. Yours truly.''—(Name on request.)

GOLDEN OR THREE-BANDED QUEENS.

After July 1: One, $1.25; six, $7.00; dozen, $13.00. They are bound to please. Pure mating and safe arrival. Prompt shipments. Circular on request.

ROSS B. SCOTT, LA GRANGE, INDIANA.



''Marugg's Special''

IMPORTED MOWING BLADES

And Sickles with DANGEL cutting edge ''THE MARUGG SPECIAL'' are praised by thousands of users in the United States. Used by leading apiarists. Write for particulars to **THE MARUGG COMPANY, Dept. B, TRACY CITY, TENN.**

FOR SALE.—Safety Comb honey cartons for sections, size 4¼x4¼x1⅞; 4¼x4¼x1½; 4x5x1⅜; 4x5x1½; 3⅝x5x1½; 4¼x4¼x1⅜; 4¼x4¾x1½; 4¼x4¼x1¾; 4¼x4¾x1⅜; for 50 cents per hundred, so long as present stock last. Sections equipped with these safety cartons will fit in the regular 24-pound shipping cases and insure safe shipment of honey. They are appropriately printed on all four sides. Send for sample. THE A. I. ROOT COMPANY, Medina, Ohio.

Collier's Bees and Queens

Breeding Queens Imported from Italy.

THREE-BANDED ITALIANS ONLY. Shipped by return mail.

Let me have your order for the 1922 season. My queens are bred by men who know how. Every order given my personal attention. All queens reared in strong two-story, ten-frame hives, under natural conditions.

Improve your weak, run-down colonies by using young, vigorous three-banded Italian Queens from my imported stock.

You take no risk buying from Collier. If you are not satisfied I will replace or refund your money. Safe delivery guaranteed. Prices: Untested—1, 70c; 6, $4.00; 12, $7.75; 24, $15.00; 100, $57.00. Select Untested—1, 90c; 6, $5.00; 12, $9.00; 100, $70.00. Tested Queens—$1.50 each. Select Tested—$2.00 each.

D. E. Collier

Ramer - - - Alabama

That Pritchard Queens AND Pritchard Service

made a hit last season is proven by the many letters of appreciation and repeated orders received. This year we are BETTER PREPARED WITH a LARGER OUTFIT AND REDUCED PRICE.

THREE-BANDED ITALIANS.

Untested ......$1.25 each; 6 for $7.00
Select Untested..$1.50 each; 6 for $8.50
Select Tested ....each $3.00

Queens clipped free on request. We are booking orders now. Send yours at once and we will do our best to ship on date you desire. Acknowledgment and directions for introducing sent on receipt of order. Safe arrival and satisfaction guaranteed. Remit by money order or check.

ARLIE PRITCHARD

R. F. D. No. 3. MEDINA, OHIO

CALIFORNIA BEEKEEPER RECOMMENDS

THAGARD ITALIAN QUEENS

BRED FOR QUALITY

"The queens I ordered from you in April are wonders. I have never had more prolific queens, and I have purchased queens from over twelve breeders. She is prolific, brood as compact and even as a brick wall. And her progeny are large, uniformly marked, medium-colored three bands.

"Of the twelve breeders I have received queens from, only three have stood the test besides yours. Why? Simply because most breeders breed for color. Your queens speak for themselves."—W. A. Holmberg, Denair, Calif.

Untested Queens, each, 1 to 6, $1.00; 6 to 49, 75c; 49 to 99, 70c; 100 or more, 65c.

THE V. R. THAGARD CO.

GREENVILLE - - ALABAMA

NORTHWESTERN HEADQUARTERS FOR

ITALIAN QUEENS

Reduced Prices for the Remainder of the Season

In order to keep running to the maximum, we are offering our Unsurpassed Italian Queens during August and September at the following reduced prices:

Untested Italian Queen.
1, $1.00; 6, $5.75; 12, $11.00; 50, $45.00; 100, $85.00.

Tested Italian Queen,
1, $2.00; 6, $11.00.

J. D. HARRAH

ROUTE 1. FREEWATER, OREGON

High Quality

Three-Banded

ITALIAN Queens

BY RETURN MAIL

Untested Queens, 1, $1.00; 6, $5.50; 12, $10.00; 25, $20.00.

Select Untested, 1, $1.15; 6, $6.20; 12, $11.40; 25, $22.25.

Select Tested, $1.75 each.

Safe delivery and fullest satisfaction guaranteed.

FRANK BORNHOFFER
MT. WASHINGTON (CINCINNATI), OHIO

Norman Brothers' Queens

Mr. Beekeepers, if you want good quality, quick service, prompt attention, and perfect satisfaction, TRY NORMAN BROS.' pure 3-banded Italian Bees and Queens. And see for yourself. We are not going to say that we have the best bees in the United States, but we do say that we have as good as can be bought. And we are going to send out just what we are advertising; you risk not one penny. If you are not satisfied with them we will replace them or refund your money. Isn't this a fair proposition to any one that wishes to purchase queens? If you have not tried our strain of bees, now is a good time, for we are going to have a number of good queens for the months of August and September, and we can make shipment by return mail. Our bees are hardy, prolific, gentle, disease-resisting and honey-gatherers. We guarantee pure mating, free from diseases and satisfaction, and safe arrival in U. S. A. and Canada.

	1	6	12	50
Untested queens..	$0.70	$4.00	$7.75	$30.00
Select Untested...	1.00	5.00	9.00	35.00
Tested queens...	1.35	7.50	13.50	
Select Tested....	1.50	8.50	19.00	

NORMAN BROS.' APIARIES
NAFTEL - - - - ALABAMA

BUCKWHEAT

ITALIAN QUEENS

Our very best queens are reared this month and next, during the flow from buckwheat and goldenrod. Conditions are ideal for queen-rearing now. Now is the time to requeen.

SELECT THREE-BANDED

(Note—We had to return a few orders in June and July, but expect to meet the demand during balance of the season. Kindly ask for price and mailing date on lots above 25.)

Untested, each, $1.25; 6, $7.00; 12, $13.00; 25, $25.00.

WE GUARANTEE

safe arrival in U. S. and Canada, pure mating, no disease, and satisfaction.

J. B. HOLLOPETER
ROCKTON, PENNSYLVANIA.

FREE QUEENS

3-Banded *Goldens*

For August to make new customers we offer our fine strain of honey-gatherers at the lowest prices possible, and for ten of the highest honey records made from colonies headed with our queens, we will give one fine tested 3-banded or Golden queen free to each. For quick service send us your order. Now is the time to requeen.

Quality Queens—August Prices.

Untested, 1 to 12..........	$0.85 each
Sel. Untested, 1 to 12......	1.15 each
Sel. Tested	2.00 each

Wings clipped free on request. Entire satisfaction and safe arrival guaranteed in U. S. and Canada.

Ohio Valley Bee Company
CATLETTSBURG, KY.

NEW PRICES

On Friction Top Cans and Pails

We quote as follows:

	25	50	100	200	500	1000
2½-lb. cans	**$1.15**	**$2.15**	**$4.10**	**$7.75**	**$18.75**	**$36.00**
5 -lb. pails	**1.90**	**3.50**	**6.50**	**12.00**	**28.25**	**55.50**
10 -lb. pails	**2.75**	**5.00**	**9.50**	**18.00**	**43.00**	**83.00**

All packed in fibre containers. They keep neat and clean till you use them. Prices F. O. B. cars Lansing and not from some distant shipping point.

Send in Your Order

FIVE-GALLON CANS—1¾-inch screw top, packed two in a case. Prices as follows:

Each, $1.40; 10 Cases, $13.00; 25 Cases, $30.00; 50 Cases, $57.50; 100 Cases, $110.00.

Shipping cases for comb honey. Folding cartons for comb honey. F. O. B. cars Lansing, **not from some distant shipping point.**

Send in Your Order

"A" GRADE TIN PASTE. Just what you want for attaching labels to tin and glass containers. It sticks. Prices as follows: **1 Pt., 25c; 1 Qt., 45c; 1 Gal., $1.50.** Postage extra. REMEMBER

IT STICKS

M. H. HUNT & SON

510 North Cedar Street LANSING, MICHIGAN

Achord's Italians Are Good Bees

Whether you have only a few colonies or five hundred, we believe you will like them and they will prove a worthy addition to your yard. They are a bright, hustling, three banded strain, bred primarily for honey production, but also gentleness and color. We have spared neither labor nor expense to make them the very best.

Price of Queens, June 15th to October 1.

Untested	1 to 19, 75c each; 20 or more, 70c each
Select Untested	$1.10 each; 5 or more, $1.00; 10 or more, 90c; 25 or more, 80c
Tested	$1.75 each; 5 or more, $1.65

Safe arrival and satisfaction guaranteed.

W. D. ACHORD, FITZPATRICK, ALABAMA.

HONEY
FOR
SALE

Selling by the roadside.

Honey Selling Service

For Honey Producers

How to market—

Our new free booklet, just off the press, tells all about markets, roadside selling helps, selling at county fairs, selling to grocers, to retail buyers, or to commission men. It tells how to grade, pack and ship, what containers to use to secure highest prices, and everything else you should know in order to market your crop and protect yourself.

How to advertise—

This same free booklet tells how to best advertise your product locally so as to arouse interest; how to educate the public to the true food value and delicacy of honey, in order that you may be able to move your crop quickly.

How to Pack—

We tell you in this free booklet how to select good, substantial containers, cans, pails, shipping cases and cartons. Also how to pack comb honey for safe shipment. We tell what containers **should not** be used, and why. We explain how to put up honey in jars in the most attractive manner.

Send for this booklet, "How to Sell Honey."
It's Free.

What You Should Buy for Immediate Use

LABELS—Attractive labels are important. We have them. A whole catalog of new and attractive designs. We do special printing for beekeepers. We sell paste that will stick to both tin and glass. Send for this handsome new label catalog today.

CONTAINERS—Our containers are good and substantial. Our comb-honey cartons are very attractive. Our prices are low and will surely interest you. Send for prices at once.

THE A. I. ROOT CO., MEDINA, O.

Fifty-two Years in the Beekeeping Business
WEST SIDE STATION

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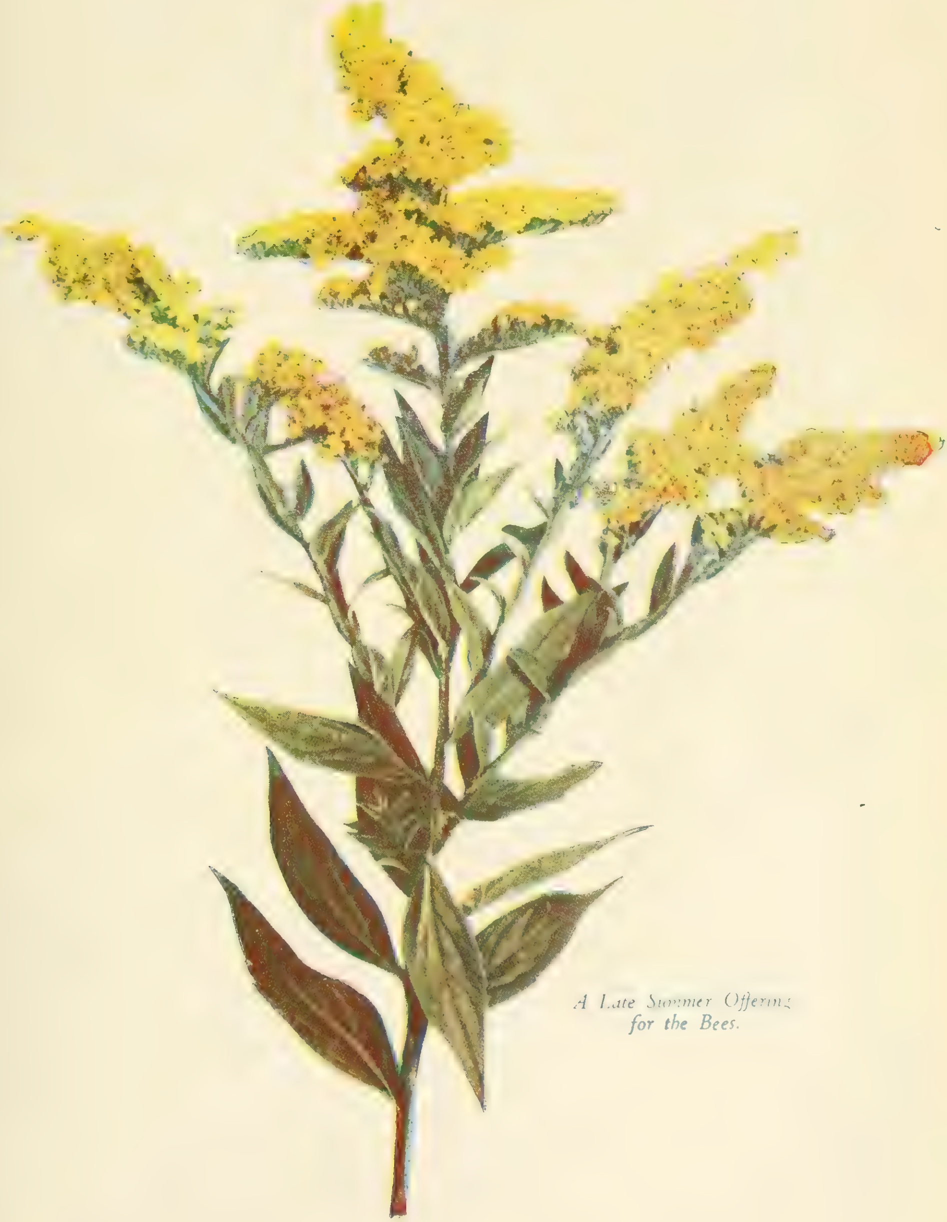
College

Gleanings
in
Bee Culture



*A Late Summer Offering
for the Bees.*

VOLUME L SEPTEMBER, 1922 NUMBER 9

$1 Order Your Queens Now $1

QUEENS OF SUPREME QUALITY.

Just think of it. Only $1 for one of my bright three-banded northern-bred Italian queens, after 19 years of select breeding. I have produced a strain of bees that get the honey and stand the northern winters. Last year every order was filled by return mail. Expect to do the same this year. This is the kind of letters I receive daily:

> "Dear Mr. Major: How early in spring could you fill an order for one dozen Italian queens? My experience and observation with your strain of Italians have shown them to be extremely gentle, superior as workers, and unexcelled in the beautifully white and even capping of the honey. Yours very truly,
>
> "Orel L. Hershiser."

Mr. Hershiser is one of our state inspectors and has been a beekeeper almost all his life; also inventor of the Hershiser wax-press. Does he know good bees when he sees them? Does a duck swim? I guarantee pure mating, safe arrival, free from disease and health certificate furnished with each shipment.

Select Untested, from 1 to 100, $1.00 each.
Extra-Select Breeders, $5.00 each.

All candy in queen-mailing cages mixed to government regulations; all orders greatly appreciated and acknowledged the same day received.

H. N. MAJOR, SOUTH WALES, N. Y.

"Griggs Saves You Freight"

TOLEDO

With its great system of railroads and electric lines, is the most advantageous point at which to make your purchases on the following: (Let us prove this to you.)

Special CASH DISCOUNTS ON BEE SUPPLIES.

For cash or exchange for honey. Write us what you will need and whether you have Comb or Extracted Honey to exchange, giving particulars as to how packed, kind, etc. We take Extracted Honey in 60-lb. cans only. No pails wanted.

HONEY! HONEY! HONEY! NEW CROP!
If you wish to buy or sell, write us and we will quote you best cash prices.

FOR SALE—SPOT SHIPMENT.

Fancy W. Clover in 5-gal. case, 2 to case	$0.16
Fancy W. Orange (crystallized) in 5 gal. cans, 2 to case	.14
Fancy W. Sage, new crop, in 5-gal. cans, 2 to case	16
Light Amber Honey, in 5-gal. cans, 2 to case	.12
Buckwheat in 5-gal. cans, 2 to case	.12

Shipping Cases and Friction Top Pails all sizes. Special prices quoted according to quantity wanted.

GRIGGS BROS. CO.
TOLEDO, OHIO
"Griggs Saves You Freight"

1922 SUMMER PRICES 1922
--ON--
Quality Bees and Queens

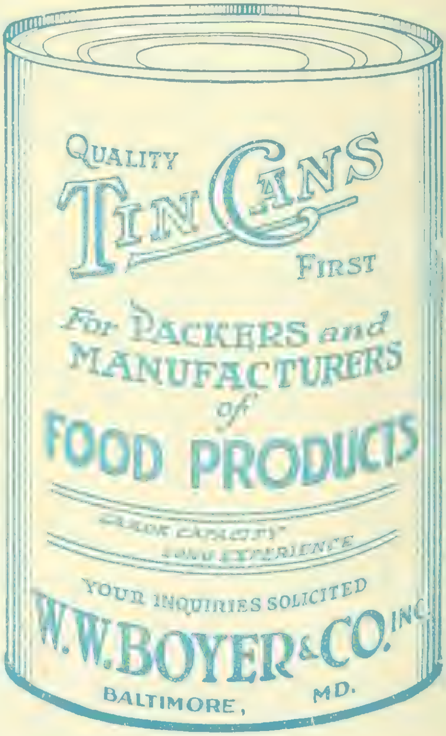
There is bound to be a rush re-queening during July, August and September. For this occasion we offer the following prices:

1 Untested Queen	$1.00
25 or over	.90
1 Select Untested Queen	1.25
25 or over	1.10
1 Tested Queen	1.75
25 or over	1.25
1 Select Tested Queen	2.00
25 or over	[illegible]

No package bees or nuclei shipped the remainder of this season.

Safe arrival and satisfaction guaranteed

THE A. I. ROOT COMPANY OF TEXAS
BOX 765. SAN ANTONIO, TEXAS.



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Entered as second class mail matter at the Postoffice at Medina, Ohio. Published monthly. Space occupied by reading matter in this issue, 64.8 per cent; advertising, 35.2 per cent.

THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

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A. I. Root — Editor Home Dept.
H. H. Root — Assistant Editor
H. G. Rowe — M'n'g Editor

HONEY WANTED HONEY

WE ARE in the market for both comb and extracted. Send sample of extracted, state how put up, with lowest price, delivered Cincinnati. Comb honey, state grade and how packed, with lowest price delivered Cincinnati. We are always in the market for white honey, if price is right.

C. H. W. WEBER & CO.
2163-65-67 Central Ave., Cincinnati, Ohio.

MR. BEEKEEPER----

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *We pay the highest cash and trade prices for beeswax.*

Write for free illustrated catalog today.

LEAHY MFG. CO., 95 Sixth Street, Higginsville, Missouri

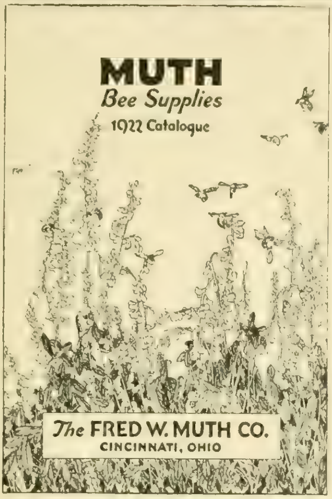
Texas Beekeepers should write to A. M. Hunt, Goldthwaite, Texas.

HONEY CANS AND CASES

Several carloads, all sizes, just received at our Ogden, Utah and Idaho Falls, Idaho, warehouses. Quick service; lowest prices. Also comb honey cases, all kinds.

SUPERIOR HONEY CO., OGDEN, UTAH
(Manufacturers Weed Process "SUPERIOR FOUNDATION" and Dovetailed Beehives.)

A MESSAGE FOR YOU



MUTH
Bee Supplies
1922 Catalogue

The FRED W. MUTH CO.
CINCINNATI, OHIO

You need our new 1922 bee supply catalog more than ever before. Have you received one? Many new articles are listed for the saving of labor and greater honey production. Our attractive prices, superior quality and prompt service will always be appreciated by beekeepers.

Send a list of your requirements to us.

THE FRED W. MUTH COMPANY,
Pearl and Walnut Streets,
Cincinnati, Ohio.

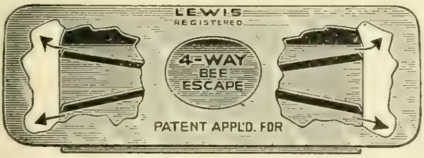
PATENTS

Practice in Patent Office and Court.
Pat. Counsel of The A. I. Root Co.
CHAS. J. WILLIAMSON,
McLachlan Bldg., Washington, D. C.

"Best" Hand Lantern

A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. **Agents wanted. Big Profits. Write for Catalog.** THE BEST LIGHT CO.
306 **E. 5th St., Canton, O.**

LEWIS 4-WAY BEE ESCAPES



Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal. Price each 18c prepaid. Made by

G. B. LEWIS COMPANY, Watertown, Wis., U. S. A.
For Sale by All Dealers.

Honey Containers

We have some interesting prices to offer on honey containers; send us a list of your requirements and let us quote you our prices.

2½-lb. cans in reshipping cases of 24 and crates of 100 and 500.
5-lb. pails in reshipping cases of 12 and crates of 100 and 200.
10-lb. pails in reshipping cases of 6 and crates of 100.
1-gallon square or oblong cans with 1¾-inch screw cap in boxes of 6.
1-gallon square or oblong cans with 1¾-inch screw cap in crates of 100.
60-lb. square cans with 1¾-inch screw cap in cases of 2 cans.
16-oz. round glass jars in reshipping cases of 2 dozen.
6½-oz. tin top tumblers in reshipping cases of 4 dozen.
Shipping cases for comb honey for any style sections in the 24-lb. or 12-lb. size.
Send for our catalog showing full line of Bee Supplies.

AUGUST LOTZ CO.
BOYD, WISCONSIN.

HONEY MARKETS

U. S. GOVERNMENT REPORTS.

Information from Producing Areas (First half of August).

CALIFORNIA POINTS.—Southern California: Demand and movement light, market steady. Some beekeepers holding for higher prices. General price in carload lots for outside shipments, usual terms basis, per lb., extracted white orange 9½-10c, white sage 8½-9c, light amber alfalfa 5¾-6c, light amber sage mostly 7c.

Northern California.—Demand and movement light. New crop reported to be of fair size but not yet on market in sufficient quantity to stabilize prices. Prices f. o. b. San Francisco in carlots range, per lb., water white sage 9½c, white sage 9c, light amber sage 7½-8c, light amber alfalfa 6-6½c. Hawaiian honey quoted per lb., f. o. b., San Francisco, water white 6½c, light amber 5½c, dark amber 5¼c, honeydew honey 3¾c.

INTERMOUNTAIN REGION.—Crop in this territory decidedly spotted. Good honey flow reported in northeastern Colorado and eastern Washington, but most producing areas are said to be securing less than average yields. Parts of Utah and Idaho report poorest crop outlook in years, due to grasshopper infestation, large army crickets, wild bees and drouth; others report good yield. The weather has been too cool in northern sections to permit best nectar secretion.

Demand reported rather quiet, with little marketed to August 1. Some carlots white extracted offered at 8½c per lb., with few sales. Small lots generally selling higher. Some beekeepers said to be accepting 7½c per lb. from nearby dealers for white to water white, but most are holding for higher price. White comb reported purchased at $3.75-3.85 per case for white and $3.50 for light amber.

In Salt River Valley, Arizona, the flow of honey is reported very erratic. Only fair crop expected, but flavor and color are said to be unusually good. Surplus to date chiefly secured from alfalfa; little gathered from cotton. Car catsclaw reported sold, 8½c per lb. for water white and 6½c for light amber.

PACIFIC NORTHWEST.—Bees reported building up well for winter. In some of the apple sections nectar flow said to be very heavy, with surplus of 200 lbs. per colony secured; in other sections surplus of 50-75 lbs. is considered average. As usual, spray poisoning has proved destructive to bees in some sections. Sales in 60-lb. cans reported ranging 11⅓-15c per lb.

TEXAS POINTS.—As the long drouth continues, the crop outlook becomes increasingly less promising; Crop estimated less than one-third normal Many beemen are reported to be leaving all honey on the hives to provide for winter needs. If rain should come, some surplus may be secured for extracting. Cotton said to be about only plant from which honey is being secured. Poison used for boll weevil does not seem to affect bees

Prevailing prices for 60-lb. cans white extracted, 2 cans in case, 7½c; 6/10s, 8½c per lb.; amber extracted 2/60s, 6½c. White chunk honey, 6/10s, 13½c; 12/5s, 14½c per lb. Beeswax 22-23c per lb.

EAST CENTRAL AND NORTH CENTRAL STATES.—Reports are general that, due to drouth, cool weather and cool winds, the crop has been less than anticipated. Many beekeepers, however, have had a continuous light yield all summer, sufficient to keep queens laying. Goldenrod flow should commence yielding late in August

Honey seems to be moving slowly as yet. Two carloads white clover extracted in 60-lb. cans reported sold at 11c per lb. Other large lot sales range 10-12c, with small lots in 60-lb. cans moving up to 15c per lb. Sales of dark amber reported at 7½-8c per lb. Some small-lot sales No. 1 white clover comb reported at $3.50-4.00 per 24-section case, others quoted up to $6.00 per case.

PLAINS AREA.—Main flow is generally over, although recent rains are prolonging it in some sections. Hubam sweet clover said to be still yielding well. Quality reported unusually good, with crop about average.

Carlot inquiry reported light, but some honey being sold locally. One carlot sale of clover reported at 11c per lb., with other sales in 60-lb. cans ranging 10-15c. Few sales comb reported $4.80-5.00 per 24-section case.

NORTHEASTERN STATES.—White honey crop in New York about 50% (reports range from 25 to 65%) normal. Pennsylvania crop reported about one-third. Buckwheat is in bloom in Pennsylvania and bees should gather nectar from it continuously until frost. In New York the buckwheat crop was sown the latest in years, and fears are expressed that the honey yield will be light. Comb honey crop said to be smaller than average in spite of big return to its production this year. Some Pennsylvania apiaries changing hands at about $4.00 per colony.

Carlot sales of white clover extracted reported at 10c per lb., with small lots in 60-lb. cans at 12c, and amber honey at 7c per lb. Carlots of white clover comb are reported moving at $5.00 per 24-section case, with small lot sales $4.80-6.00. Some beekeepers selling to nearby dealers at 10c per lb. for white clover extracted, 6c for dark, and $4.50 per case for white clover comb.

Telegraphic Reports from Important Markets.

BOSTON.—1 car California, 8 cases Vermont and 50 cases New York arrived. Demand light, which is usual at this season. Comb: Practically cleaned up, few sales reported of new crop New York in 24-section cases at $5.50-5.75. Extracted: Sales to confectioners and bottlers, Cuba and Porto Rico, amber 80-85c per gal. California, white sage 14-16c, light amber sage 12-14c per lb Broker quotations, for August and September shipments, delivered Boston basis, California light amber alfalfa 7c, white sage 10-11c.

CHICAGO.—No fresh carlot arrivals. Supplies moderate. Movement active last week with cool weather prevailing, but last few days rather slow with return of hot weather. Market holding generally steady. Extracted: Sales to bottlers, candy manufacturers and bakers, California and Nevada per lb., light amber mixed mountain flowers and some straight alfalfa 8-9c, with occasional sale low as 7½c. Nevada and Montana, white sweet clover and alfalfa 9½-11c, mostly around 10c. Comb: Sales to retailers, Iowa and Colorado, sweet clover and mixed sweet clover and alfalfa No. 1 heavy $4.00-4.25. Beeswax: Moderate receipts Market holding firm with fair trading. Sales to wholesale druggists and laundry supply houses per lb., Colorado, California and Utah, light 29-31c, dark 25-28½c; Central and South American, light 23-27c, some very best 29c, dark 20-23c.

KANSAS CITY.—No carlot arrivals since last report. Supplies light. Demand and movement light, market dull. Extracted: No sales reported Comb: Sales to jobbers, Colorado, 24-section cases, alfalfa light weight No. 1, old stock $4.00. Missouri, 24-section cases, white clover heavy No. 1, new crop $5.50.

NEW YORK.—Domestic receipts very light, foreign receipts limited. Demand and movement light, market rather dull. Extracted. Spot sales to jobbers, wholesalers, confectioners, bakers and bottlers, domestic, per lb., California, light amber alfalfa 7½-8½c, light amber sage 8-9c, white sage 10½-11c, white orange 11½-12½c. Intermountain section, white sweet clover 10½-11c. South America and West Indies, refined 60-70c mostly 65c per gal. Beeswax: Foreign receipts limited. Demand limited, movement light, market steady. Spot sales to wholesalers, manufacturers and drug trade, per lb., South American, Chilian, and Brazilian, light 28-30c, Cuban, light 28-29c, dark 22-25c. African, dark mostly 23-25c.

ST. LOUIS.—Demand and movement very slow and draggy, market very dull. Comb: Sales to wholesalers and jobbers, 24-section cases Minnesota, white clover No. 1 medium $4.50-5.00. Extracted: Sales to wholesalers and jobbers, California, 5-gal. cans light amber alfalfa 7½-7¾c per lb. Beeswax: Ungraded average country run quoted nominally 25c per lb. to jobbers.

H. C. TAYLOR,
Chief of Bureau of Markets.

Special Foreign Quotation.

LIVERPOOL.—Extracted honey is worth about nine cents per pound in American currency; bees-

wax about 29 cents per pound. **Taylor & Co.**
Liverpool, England, Aug. 2.

The A. I. Root Company's Quotation.

Since our last quotation we have paid the following prices in carlots f. o. b. shipping points: Water white extracted white clover, from local producers, with low freight rate, 10½c per lb.; Idaho white clover with trace of sweet clover or alfalfa, 8½c; water white alfalfa, 7c; water white sage, 9c; water white orange, 9½c; white mesquite, 6c; and light amber mesquite, 5½c; white sweet clover or alfalfa comb honey, fancy, $3.75 per case; No. 1, $3.50; and No. 2, $3.25. These comb-honey quotations are on a basis of $4.50 per case for fancy laid down in Medina; $4.25 for No. 1, and $4.00 for No. 2. We have just at present sufficient stocks for our needs.

The Opinions of Honey Producers Themselves as Reported to Gleanings in Bee Culture.

Early in August we sent to actual honey producers and some associations the following questions:

1. What is the average yield per colony corrected to date this season in your locality? Give answer in pounds. (a) Extracted honey? (b) Comb honey.
2. How does this compare with the average yield for your location? Give answer in per cent.
3. What prices are producers being offered for the new crop at their stations in large lots? (a) Extracted honey, per pound? (b) Comb honey, per case?
4. What are prices when sold to grocers in case lots? (a) Extracted honey in 5-lb. pails or other retail packages? (b) Comb honey, fancy or No. 1 per case?
5. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair or rapid.

The answers as returned by our honey and bee reporters are as follows:

State.	Reported by:	Average yield. Extr.	Comb.	Pct. of Nor. Y'd.	In large lots. Extr.	Comb.	In case lots. Extr.	Comb.	Movement.
Alabama	W. D. Achord	10		25			$0.60		Fair
Alabama	J. M. Cutts		0						Slow
Arkansas	J. Johnson		24	100		$4.80	.75	5.00	Slow
Arkansas	J. V. Ormond			150	.20	6.00	1.00		Slow
British Columbia	W. J. Sheppard	100		200	.27		1.35		Slow
California	G. Larinan	70		120	.08				Slow
California	M. C. Richter	20	0	15	.10		1.50		Fair
California	M. A. Sayler	25	15	100	.09	4.00	.75	4.80	Fair
California	M. H. Mendleson	55	22				.85	5.75	Fair
Colorado	J. A. Green	50	30	50		3.50	.70	4.25	Slow
Colorado	B. W. Hopper	40	10	50			.50	4.50	Slow
Connecticut	A. Latham	30	45	125					Slow
Connecticut	A. W. Yates	20	20	30	.12	5.25	.90	7.00	Slow
Florida	C. C. Cook	90		175	.10		.75		Fair
Florida	H. Hewitt	55		125	.07		.65		Slow
Florida	W. Lamkin	75		125	.08		.65		Slow
Georgia	J. J. Wilder	70	50	110	.10	4.00	.75	5.00	Fair
Idaho	J. E. Miller	60	20	50	.07		.50	5.50	Fair
Illinois	C. F. Bender		46	100		4.80		5.50	Fair
Illinois	A. L. Kildow	75	50	125			1.00	6.00	Slow
Indiana	T. C. Johnson	75	60	125			.90	5.50	Slow
Indiana	J. Smith	25		100			1.00		Fair
Indiana	E. S. Miller	50	30	60			1.00	6.00	Fair
Iowa	E. G. Brown	100		100	.10		.75	4.50	Good
Iowa	W. S. Panghurst	110		80			.80	5.75	Fair
Kansas	J. A. Nininger	75	50	100			.75	5.50	Slow
Kansas	C. D. Mize	60	50	100			.75	5.00	Slow
Maryland	S. G. Crocker, Jr.	40	30	60			1.00	6.00	Slow
Massachusetts	O. M. Smith	10		25					Slow
Michigan	I. D. Bartlett	75	50	100			.75	4.75	Slow
Michigan	L. S. Griggs	100	60	120	.10		1.00	6.00	Slow
Michigan	F. Markham	80	50	80	.12	5.00	.80	5.50	Fair
Missouri	J. W. Romberger	90	80	90	.15	5.00	.75	5.50	Slow
Missouri	J. H. Fisbeck	80		120					Slow
Nevada	T. V. Damon	50	30	50	.06	3.50			Slow
New Jersey	E. G. Carr		10	25					
New York	F. W. Lesser	30	15	33				4.80	Slow
New York	Adams & Myers	30	10	50	.10	5.00	1.00	6.00	Fair
North Carolina	W. J. Martin	75	50	90	.08	4.50	1.00		Fair
North Carolina	C. S. Bumgarner								Fair
Ohio	F. Leininger	78	50	75	.11	4.80			Good
Ohio	R. D. Hiatt	70	30	60			1.00	5.50	Fair
Ohio	J. F. Moore	75		100	.11		.80	4.20	Slow
Oklahoma	J. Heueisen	60		100			.75		Slow
Oklahoma	C. F. Stiles	30	10	80			1.00		Slow
Oregon	H. A. Scullen	75		100			.85		Fair
Pennsylvania	H. Beaver	40	30	100	.09	4.25	.65	4.50	Slow
Pennsylvania	D. C. Gilham	40	32	110			1.05	7.20	Slow
Pennsylvania	C. N. Greene	30	20	75	.09		.62		Slow
Pennsylvania	G. H. Rea	20	10	30					
Rhode Island	A. C. Miller	25		50			1.25		Slow
South Carolina	A. S. Conradi		50	75			1.25		Rapid
Texas	T. A. Bowden	20		35			.75		Fair
Texas	J. N. Mayes	35	35	85	10		.55		Slow
Utah	M. A. Gill	80	50	80	.08	3.60	.50	4.25	Fair
Utah	N. E. Miller	[illegible]		33					Slow
Vermont	J. E. Crane	75	50	110				7.50	Slow
Virginia	T. C. Asher	15	12	25			1.10	6.00	Slow
Virginia	L. N. Gravely	48	26		.12	4.80	.75	6.00	Slow
Washington	G. W. B. Saxton	100		100	.10				Slow
Washington	W. L. Cox	125		100			.90	5.50	Fair
West Virginia	T. K. Massie	10	25	55					Fair
Wisconsin	N. E. France	100	45	200	.12	4.56			Fair
Wisconsin	E. Hassinger, Jr.	65	40	100			.85		Fair
Wisconsin	H. F. Wilson	75		100	.13	4.75	.95	6.50	
Wyoming	A. D. Brown	60		35			.85		Slow

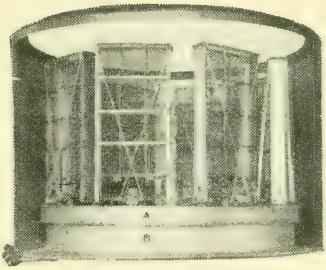
QUESTION—

Mr. H. L. Jenkins, Hamburg, Iowa, sent us his order for 100 cases of two 5-gallon cans, and saved $21.00.

Are We Saving You Money?

THE A. I. ROOT COMPANY OF IOWA
COUNCIL BLUFFS, IOWA

Lewis Extractors



Lewis-Markle Power Honey Extractor.
Tank cut away.
A—Pan over machinery. B—Bottom of tank.

Made in 4 and 8 frame sizes. Accommodates 2 sizes of baskets, power operation, machinery underneath, no vibration, tank and basket instantly removable for cleaning. A commercial success. Circular free. Address:

G. B. LEWIS COMPANY

Watertown, Wisconsin, U. S. A.

There's a Distributor Near You.

PAST AND GONE

Season of 1922

◆

It will pay you to think of 1923 and get in your order for supplies early. From now on to the spring months we can give you prompt service.

Do not wait till you need the goods, but anticipate your needs so as to be prepared when next season arrives.

◆

A. I. Root Co. of Syracuse, N. Y.

1631 West Genesee St.

NEW BINGHAM BEE SMOKER

PATENTED

WOODMANS FAMOUS BEE-WARE

The Smoker

You Ought to Own

THE most important invention in beekeeping, as little can be accomplished without the Bee Smoker.

The *new Bingham Bee-Smoker is the most* efficient and durable machine on the market. The standard for over 40 years in this and many foreign countries, and is the all-important tool of the most extensive honey producers of the world.

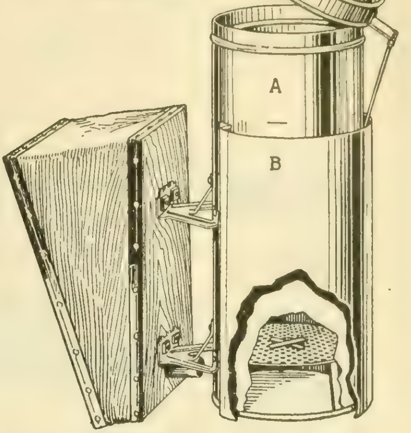
Comes with metal legs, metal binding and turned edges. The four larger sizes have hinged covers. The fire grate is of very substantial material, with an abundance of draft holes, the 4-inch size having 381 holes, equal to an opening of 2-inch square.

A valve in the bellows of the larger sizes makes the Smoker respond to the most delicate touch.

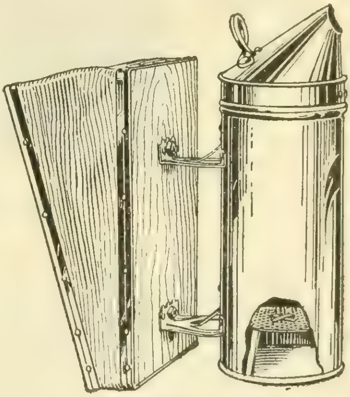
The new Bingham comes in six sizes, including the Big Smoke, which is furnished both with and without shield. The larger sizes are best, as they hold more fuel, give more smoke, require filling less often, and are especially recommended to those who work with their bees several hours at a time.

Write for our complete catalog of bee supplies and accessories. Special circular of all sizes of Bingham Smokers free for the asking.

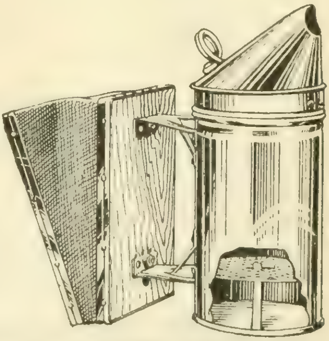
A. G. WOODMAN CO.
238 Scribner Ave., N. W.
GRAND RAPIDS, MICH., U.S.A.



BIG SMOKE—With Shield.
Fire Pot, 4 x 10.



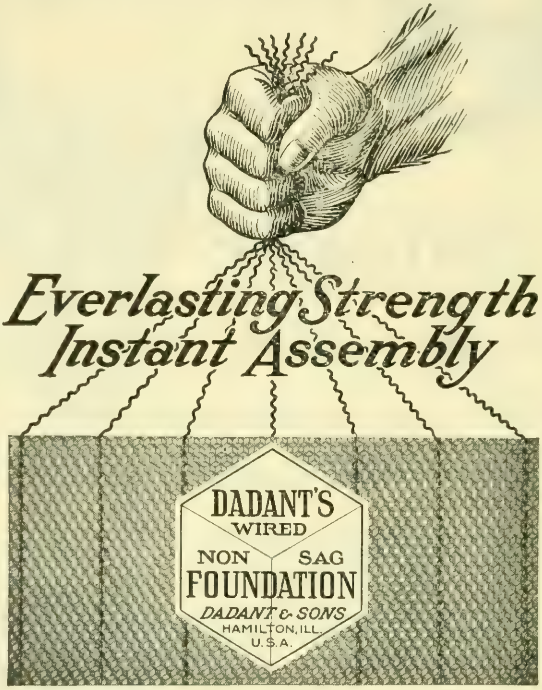
CONQUEROR.
Fire Pot, 3 x 7.



LITTLE WONDER.
Fire Pot, 3 x 5½.

Dadant's Wired Foundation is Sag-Proof

Reinforced
with
Radiating
Shoulders
of
Strength



The
Finished
Comb
a
Delight
to
the Eye

HERE IS THE EVIDENCE.

KENTUCKY

I have tried Wired Foundation this year under exactly the same conditions and surroundings, as far as I could tell, with foundation that was wired horizontally. Every frame of the old-style foundation sagged badly and the Wired Foundation made perfect combs. I call it the greatest improvement modern beekeeping has had for many years.—P. C. W.

IOWA

I believe this foundation will prove a labor-saver. It can be inserted in a short time. Wiring frames is sure a tedious job at best. There is no sag in the foundation. I threw them quite hard in extracting and for new combs they stood up fine.—B. A. B.

WASHINGTON

There has been absolutely no sagging or stretching of cells. There is no question in my mind that this method of wiring foundation is a great step in advance of the old horizontal method, and these vertically wired combs are the best combs I have in my yard.—A. E. B.

TEXAS

We are glad to say that we have thus far gotten 93 per cent absolutely perfect combs. We have seen no evidence of vertical sagging.—E. G. L.

DADANT'S WIRED FOUNDATION may be used in new-style split bottom-bar frames or in the old-style one-piece bottom-bar frames with equal satisfaction. It is also adaptable to any size and style of brood or extracting frame.

COSTS NO MORE. Since Dadant's Wired Foundation cuts the cost and labor of wiring, its extra price of three cents per pound above the catalog prices of old-style foundation is thus more than returned to the beekeeper.

BEESWAX.—We need large quantities of beeswax and are paying good prices now. Ship to us at Hamilton, Illinois, or Keokuk, Iowa, or drop us a card and we will quote f. o. b. here or f. o. b. your own station as you may desire.

Wired Foundation is sold by all distributors of Lewis "Beeware" and Dadant's Foundation. Send them your orders.

DADANT & SONS, HAMILTON, ILLINOIS

GLEANINGS IN BEE CULTURE
SEPTEMBER, 1922

EDITORIAL

The Isle of Wight Disease Bill.

THE hearing on the Isle of Wight Disease Bill before the Agricultural Committee of the Senate was held on Aug. 2, when the bill was reported out unanimously by the committee for enactment. Up to the time of going to press no word has been received as to the passage of this bill by the Senate.

* * *

Hubam for Winter Pasture in the South.

IN an article in the August 10th issue of Modern Farming, Chas. F. Leach advocates the use of Hubam as a winter pasture crop for the South. He plants it even in the most acid soil, but first puts on enough lime to insure a good growth of Hubam. He says:

> For winter pasture in the lower South, or for an early hay crop, no plant so far discovered can equal Hubam.

* * *

A New Circular for Beekeepers.

THE United States Department of Agriculture has just issued Department Circular 222, "The Insulating Value of Commercial Double-Walled Beehives," by E. F. Phillips, which gives the results of tests of the escape of heat from different makes of double-walled hives. Beekeepers will be especially interested in the results when double-walled hives, having an air space between the walls, were compared with those in which the space was filled with sawdust, the difference of course being in favor of the packed hives. The tests also show a great loss of heat through the bottom when the bottom is not packed.

Most beekeepers now recognize this weakness in double-walled hives without bottom packing, and in building winter packing cases are providing for bottom packing. This of course makes less difference when the hive-stand is so arranged that the air can not circulate under the hive or where the snow is well banked up at the sides.

The circular also gives a table showing the comparative insulating value of various materials used for packing.

This circular can no doubt be obtained free as long as the supply lasts, by writing to the Bureau of Entomology, Washington, D. C., asking for Department Circular 222.

Honey Crop and Marketing Condition.

IN the clover region new honey appeared on the market several weeks earlier than usual. Unfortunately some of this new crop was offered in the midst of the heaviest fruit and berry season this country has had for several years. Instead of waiting until these were out of the way, as advised in these columns last month, many beekeepers having honey for sale have forced it upon an unwilling market by reducing the price, in some cases to a figure lower than the dealers would have been willing to pay for honey in carload lots. The amount of honey that has been crowded on the market in this way is small, but it has already had the effect of depressing the market and causing dealers to expect still lower prices. Of course the railroad and coal strikes have also had a depressing effect upon the market.

Since honey is not a perishable product in the same sense as fresh fruits and vegetables, it is entirely unnecessary to dump it at a sacrifice on the market as soon as it has been harvested. A stabilized market for honey is better for both producer and dealer. The further we can get away from a speculative honey market, the better for all concerned.

The sensible thing in marketing is to collect all the data possible as to the amount of honey produced as well as the probable buying power of the public, and then establish and maintain a price that will move the crop before the new crop comes on next year. Gleanings is doing all it can to put before its readers all available facts as to the crop and market conditions. According to the statistics thus far known, we have this year a crop of honey only slightly greater than last year, with but little of last year's crop remaining unsold. The total amount of honey in the country at this time is no doubt less than it was a year ago when a large amount of honey had been carried over from the previous year. In the light of these facts and judging by what was accomplished last year in disposing of honey, it would seem that careful but aggressive marketing should result in cleaning up this year's crop without selling at a sacrifice.

See the articles on this subject by H. H. Root and E. G. LeStourgeon in this issue.

Helping the Grocer Sell Honey.

MANY producers seem to think that their responsibility ceases when they have sold their crop to a dealer and received the cash in payment for the honey. It is true that the responsibility for re-selling is shifted to the dealer when he buys the honey, but the producer can not afford to lose interest in the ultimate sale to the consumer just because he has been able to induce a dealer to buy his honey and turn over the cash for it. It should be remembered that the honey is not really sold until the consumer buys it.

Those who supply their local grocers with honey in case lots should help the dealer dispose of it so that he will be ready to buy more when his stock runs low. This can be done by display advertisements in the local papers, by window displays and by seeing that the honey is so conspicuously located in the store that it will be seen. The retail grocer is not necessarily a salesman. He hands over the counter what the people ask for. It is not his business to create a demand for honey any more than for any one of the many other items in his store.

The grocer is able to distribute the beekeeper's honey to consumers cheaper than anybody else can do it but he should not be expected to assume the responsibility of creating a greater demand for honey.

* * *

Bees Help in Control of Fireblight.

THE Ohio Agricultural Experiment Station, Wooster, Ohio, has published a bulletin (No. 357) on the dissemination of fireblight, written by H. A. Gossard and R. C. Walton, which is of interest to beekeepers. The authors have made an exhaustive study to determine to what extent honey bees may be carriers of fireblight, and while they found that they are capable of carrying the blight just as many other agencies do, their studies have revealed that honeybees also play an important part in the control of this disease by promptly pollinating the blossoms, thus carrying them quickly past the period of susceptibility to blight.

The following extract from the bulletin certainly speaks well for the honeybee:

> There would apparently be some disastrous blight years if no honey bees were in existence, and from our researches (p. 108) we believe it is fair to infer that in the early part of the blooming season bees do not scatter much blight, but by promptly pollinating the blossoms as fast as the stigmas ripen, hurry such fruit past the period of susceptibility to blight, so that in about three days after pollination, such blossoms or fruits will scarcely blight at all. This explains why it is that orchardists who also keep numerous stands of bees have full crops of fruit, even when blossom blight is very bad. While it seems to be true that bees are among the most effective disseminators of blossom-blight toward the end of the blossoming period, this may in large measure be condoned or in some cases regarded as advantageous, since their work in killing the blossoms will reduce the work of thinning, an operation that may be necessary if too many fruits have set.

Mrs. Miller Expresses Appreciation of Miller Memorial Library Fund.

IN a letter of appreciation of the response of beekeepers in raising a fund for the Miller Memorial Library Mrs. Miller adds the following paragraph, which the Editor has asked permission to publish:

> We are very much gratified over the report of the Memorial Fund. The beekeepers have done so well.
>
> Although the one who made this the most beautiful spot on earth for us has gone, we are still living here, trying to do the things we think he would want done. With kindest regards from Miss Wilson and myself, Very sincerely yours,
>
> Mrs. C. C. Miller.

* * *

The Miller Memorial Library to be Located in Wisconsin University.

THE committee in charge of the Miller Memorial Fund has decided to locate the Memorial Library at the University of Wisconsin. Among the other institutions considered by the committee were Cornell University and the Iowa Agricultural College, but the committee finally voted unanimously to locate the memorial at the University of Wisconsin.

In many respects this is an ideal location for this library. H. F. Wilson, Professor of Beekeeping at the university, who by the way is also a practical honey producer, has been interested for some time in a beekeeping library for the university. Such a library being one of his hobbies, his enthusiasm as well as the thought he has already put into the library idea will now be of great value to the Miller Memorial Library. Being on the ground and in close touch with its affairs, he will naturally put into this his very best effort, and as long as he is connected with the University, beekeepers may rest assured that the Miller Memorial Library will be well cared for.

The University of Wisconsin is a rapidly growing institution in a state whose citizens are progressive and who take great pride in their educational institutions. Being located at Madison, Wis., this library of beekeeping will be in the midst of the great white clover region of the United States and Canada, as well as near the center of population in the United States. Madison is only about 70 miles from Marengo, Ill., where Doctor Miller worked out so many of the beekeepers' problems. It at least seems fitting that this memorial is to be located so near the home of the man whose memory it is to perpetuate.

The funds that have been collected, as well as any additional contributions that may be made, are to be turned over to the University to be invested, only the income from the investment to be used for the building up and maintenance of the library. The University, we understand, will furnish space for the library and have complete management of its affairs.

One great advantage of this kind of memorial over a monument of stone or something of that character is its flexibility. Contributions of books and money can be sent at any time. The library will no doubt be small at first; but, as time goes on, in addition to the books purchased from the income on the funds invested, contributions will be added indefinitely. Again, since the money that has been collected is to be invested in safe securities, and only the income used, this memorial should endure as long as libraries exist in the world.

The committee, in completing this phase of its work, deserves the gratitude of the beekeepers of the world. Gleanings is hoping that this committee will not consider its work as complete when the agreement with the University is written and the funds turned over. Its members can still do much to encourage donations of money, books, papers and service from those who can contribute in any way to build up a great library of beekeeping for the whole world at the University of Wisconsin.

* * *

Useless Consumers in Extracted-Honey Production.

THE heavy consumption of stores for brood-rearing during the latter part of the honey flow, when producing extracted honey, is sometimes quite a problem. Colonies run for comb honey usually begin to crowd the queen with honey during the latter part of the honey flow, thus restricting brood-rearing; but, for extracted honey, most of the honey is carried into the supers, leaving plenty of room for the queen in the brood-chamber.

If the early honey flow is followed by a later one, as in some parts of the buckwheat region, this extra brood-rearing works out to the profit of the beekeeper, for the resulting bees become producers during the later honey flow. In localities which do not have a fall honey flow and especially where the main honey flow is followed by a complete dearth of nectar, as is too often the case in portions of the clover region, the rearing of so much brood late in the honey flow results in a loss, for the workers reared during the latter part of June and July are too late to take part in gathering the honey crop and too early for winter bees. Not only has it cost four pounds or more of honey for each frame of brood reared, but these bees must live even though they do not work, and of course consume considerable honey during their lifetime.

A striking example of what happens when brood-rearing is carried on at full speed to the end of the honey flow came to the Editor's attention this season. Colonies run for extracted honey forged ahead of those run for comb honey in the same location, so that during the honey flow it seemed they would store at least twice as much honey as the colonies storing comb honey. The honey to be extracted was left on the hives until late in July, about three weeks after the honey flow had closed. During this time the bees had consumed so much of the honey that the yield of extracted honey per colony was about the same as the yield of comb honey from the other colonies.

But what is worse, the colonies operated for extracted honey had practically no honey in the brood-chambers at the close of the season, while the comb-honey colonies had their brood-chambers heavy with honey. When this honey in the brood-chambers is counted, the comb-honey colonies actually produced more than those for extracted honey because they had consumed less. This of course is an extreme case, but in some localities something like this occurs often enough to become a serious problem. Fortunately, the second crop of red clover yielded a little this season, and the colonies used to produce extracted honey may gain enough to go again ahead of the comb-honey colonies because of their greater strength.

It is not often that colonies ever become too strong, but in many cases it would be better if brood-rearing were restricted at least during the latter half of the main honey flow, provided there is no later honey flow. Colonies that are extra strong in July and August usually go down to normal winter strength, and, if these extra bees were not useful in gathering nectar, they were reared at a loss.

Whether it will pay beekeepers to restrict brood-rearing when the resulting bees can not become producers is questionable because of the uncertainties of the seasons. If brood-rearing were restricted this season, an unexpected later honey flow might make the beekeeper wish he had left the colonies alone.

Where one can be certain that further extensive brood-rearing is undesirable, the apiary can be requeened by killing the old queen and giving a ripe queen-cell, thus bringing about a break in brood-rearing during the latter part of the honey flow. In many localities the saving of stores brought about by this break in brood-rearing should more than pay for the labor of requeening, giving the advantage of young queens for the next year without cost.

When the queens are permitted to have free range in the hive previous to the honey flow and perhaps during the first week of the honey flow and then put below the excluder, there is sometimes a great restriction in brood-rearing because of the pollen in the combs in the lower story. The bees are slow about removing pollen to make room for brood-rearing, so that such colonies sometimes rear even less brood at this time than do comb-honey colonies. This may be advantageous in some localities, but of course would be a great disadvantage wherever there is a fall honey flow.

THE MERCHANDISING OF HONEY

An Analysis of the Costs of Distribution. How Beekeepers Can Help by Selling Locally

By H. H. Root

At a field meeting of New York beekeepers at Venice Center, Aug. 4, George B. Howe, speaking of the highly important subject of honey selling, hit the nail squarely on the head when he said the whole situation would be taken care of if each honey producer asked himself the question, "Am I my brother's keeper?" No producer can afford to overlook the fact that his neighbor has the right to sell his honey at a fair price. No producer can ignore his neighbor and live unto himself alone.

The rail and coal strikes have created distrust and unrest on the part of merchants, resulting in a temporary lull in the buying of everything except staple articles of food. Since the per capita consumption of honey a year is still around two pounds, honey comes in the class of luxuries, and merchants are showing an unwillingness to stock it as they ordinarily do at this time of the year. They wish to wait until some of these uncertainties are cleared up.

For fear that this temporary condition may cause some producers to grow panicky and to offer their honey at a price unfair to themselves and manifestly unfair to their neighbors, this article is written. This is not a time to fly into a senseless panic; this is not a time for alarm over the sale of this year's honey crop to the extent of dumping the honey upon an unwilling market at a price near or below actual cost. This *is* a time for calm reflection and for constructive, consistent and continuous effort on the part of producers towards increasing the consumer demand for this safest and most delicious of all sweets. On the producers themselves a grave responsibility now rests. Mistakes, that in normal times might pass almost unnoticed, will now prove costly. Errors in carrying out the principles of true salesmanship will now react with telling emphasis against the very life of the whole industry.

Retail, Wholesale and Jobbing Prices.

Too many original producers of food of all kinds, including honey, through ignorance or carelessness, often forget one of the oldest laws known to trade, the legitimate difference in the retail, wholesale and jobbing selling prices. It seems hard to believe and yet many cases have been reported of beekeepers selling a quantity of honey to all the grocers in a town, and then proceeding to peddle honey in the same packages at the same price to these grocers' customers in the same town. No more flagrant violation of the principles of salesmanship could be made.

The larger the quantity sold of any item the lower the price can be per item; so, the greater the volume sold, the smaller the discounts can be to the wholesale and jobbing trade. In other words, the greater the turnover, the less difference there is between wholesale and retail prices.

Take for example an article which sells in great volume—granulated sugar. The turnover is extremely large, as proven by the per capita consumption of 94 pounds of sugar in a year. Because of the volume handled the discount can be relatively small; in one particular case sugar was retailing at $8.00 per cwt., wholesaling at $7.65 and jobbing at $7.30. The retailer in this case was making only ⅓ cent per pound—about 4.3%.

A well-known breakfast food, retailing at $4.30 a case, wholesaled for $3.65 a case. The grocer made 65 cents on a case, or a little over 15%.

A widely advertised table syrup retailed at $3.30 a case. It wholesaled for $2.75, the difference being 55c on a case, or 16⅔%.

Evaporated milk that retailed for $4.80 wholesaled at $4.00, the grocer, therefore, making 80c on a case. Here again the difference was 16⅔%.

On an article not enjoying so large a sale, preserves, the retail price was $3.00, the wholesale $2.40, the difference, 60c, amounting to 20%.

The figures given above are not intended to be taken as an average, but are merely specific instances of well known foods on the market, no attempt being made to ascertain all of the packages in each separate line to determine what the average is.

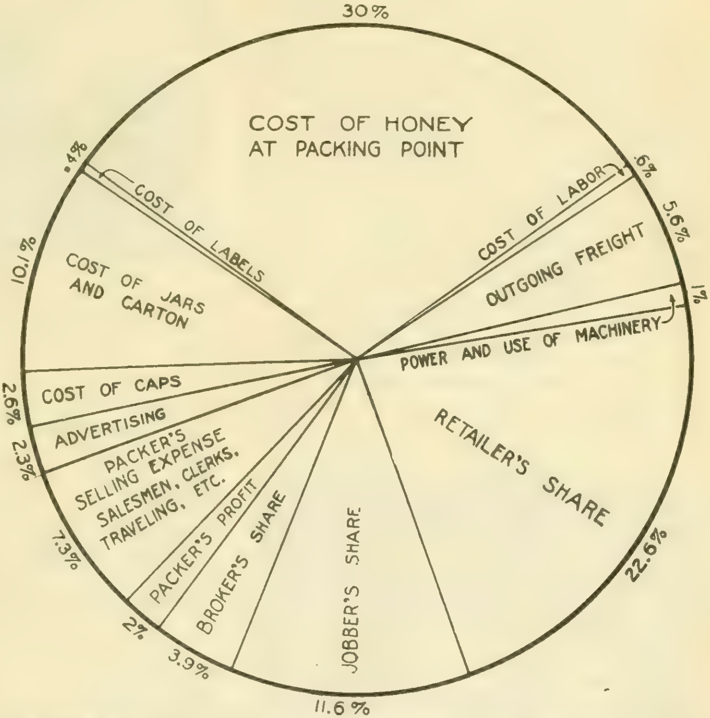
Without stopping to go further with these illustrations, let us now turn to honey, confining our attention first to comb honey. According to the United States Government Market Reports, the price of comb honey to retailers, that is, the wholesale price, varies considerably, as might be expected, owing to the locality, distance from market, and the quality of the honey. Take the wholesale price, for example, of $4.80 for a 24-section case, reported for the East Central and North Central states in the August Gleanings. This is 20 cents per section. That honey may be retailed at 25 cents a section, or $6.00 a case, the difference between the wholesale and retail price being 5c per section, in other words 20% of the retail price. (Confusion sometimes arises over what is meant by such discount. This 5c means that the retail price is 25% above the wholesale price, but it also means that the wholesale price is 20% under the retail price—in other words the retailer is making 20% of his selling price or 25% on his purchasing price.)

There is a great variation in the retail price of comb honey of practically the same quality. One retailer buying this honey at $4.80 a case will retail it at 30c a section instead of 25c, securing $7.20 for the case instead of only $6.00. His profit then is 10c a section, or $33\frac{1}{3}$% of the selling price. Some retailers expect even a higher margin on comb honey, because of the loss from leakage or improperly graded honey. Comb honey varies so much that it is a difficult matter to establish anything like a standard selling price, either jobbing, wholesale or retail. I wish to emphasize that comb honey, not selling in anything like the volume that most breakfast foods, table syrups, etc., do, should be and is sold at a higher margin.

Now what is true between the retail and wholesale price is also true between the wholesale and jobbing and between the jobbing and producers' price. The larger the volume of sales, the smaller the profit per case may be.

If honey is selling in carlots at 12c a pound, a roadside seller should not retail honey by the roadside at only a cent or two cents above the price in carlots. Or speaking of comb honey, if the price of comb honey in carlots is $4.50, a roadside seller should not sell that same comb honey at $4.75 or $5.00 a case. It costs perhaps $1.00 a case to sell comb honey in a small way. The 25c or 50c, as may be, cannot begin to pay the cost of making the sale. Frequently the bare cost of selling an article is around 25% of its first cost. The cost of selling must be taken into consideration when arriving at the selling price, whether it be retail, wholesale or jobbing.

Where the producer is selling direct to the consumer, he not only has the labor of selling, but he also runs the risk of losing the occasional bad account and he must secure the necessary publicity. All these costs should be taken into consideration. The consumer, as a rule, ought to be able to buy cheaper from a producer than from a retailer, for the consumer is thereby paying part of the expense himself, such as transportation charges, storage, etc. Nevertheless, it is a great mistake for the producer to retail honey by the section or by the jar, as the case may be, at anything like the price that he would sell to a wholesaler or even to a retailer. If it cost $1.00 a case to retail comb honey, that dollar should certainly be added to the selling price. Too many producers forget this, and not only lose the difference but they thereby jeopardize their own business in the future and that of their neighbors. Certainly they are not asking the question, "Am I my brother's keeper?"



This diagram shows where the consumer's dollar goes. The various costs given here are based upon honey packed in 14-ounce jars and distributed through the regular trade channels. The costs will vary for the different sizes of packages. In bottling for local trade only the broker's share, jobber's share and outgoing freight are eliminated, but the cost of advertising and other selling expenses, as well as labor and use of machinery, are increased.

It is not possible in the space allowed here to discuss fully the cost of canning or bottling honey. Generally speaking, the smaller the package the greater the cost of that package in proportion to the cost of the honey. The above diagram shows how the consumer's dollar is divided when he buys honey in 14-oz. jars. If he buys in very small bottles, the cost of the bottles, labels, labor, selling costs, etc., are still greater in proportion to the amount of honey he receives, but in larger packages these items are proportionately less.

I have made the statement that this is the time for constructive, consistent and continuous effort in selling honey. I will now go further and say that the lack of consistent and systematic effort has, in my opinion, very nearly brought on a crisis in the industry. I do not fear that we are getting back to where we were years ago when carloads of honey in increasing numbers were being held over; what I do fear is that the lack of real concern on the part of the producer toward increasing the consumer demand is standing in the way of fair prices to the producer for the product. I do not advocate a final retail price so high that the consumer will not buy. I do advocate continuous sales activity along the line of popularizing honey as a food.

What Is the Best Remedy for These Conditions?

Producers can do much to help matters in the immediate future. The old producer needs to get some of the unbounded enthusiasm for honey that the beginner in beekeeping has. We all know that the beginner talks honey in the daytime and in the nighttime, at home and abroad. He does it until he sometimes makes himself a nuisance, and yet his enthusiasm is such that he sells more than he himself can produce and has to buy from his neighbors. The industry in general will be helped when the greatest possible amount of honey produced in a given state or in a given locality can be consumed near by. When it costs two or three cents a pound to move honey in bulk from one part of the country to another and a greater amount still to move it again in bottled form, there is danger of piling up a transportation charge that is actually greater than the original cost of the honey. What is the use of doing a large business and making no profit? Why keep bees if the bees do not keep you? I firmly believe that only when the use of honey on the table becomes more popular will the producer make an adequate profit on his investment.

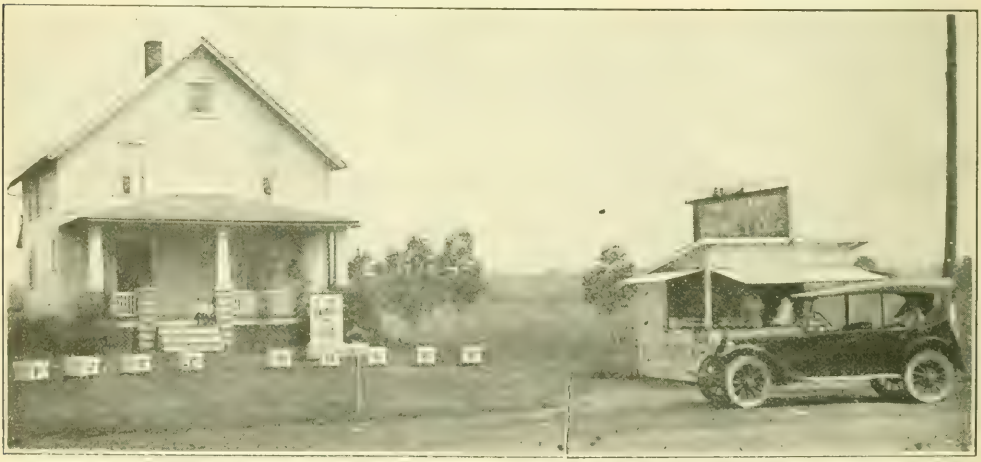
The following suggestions have all been tried and proven. No one producer will attempt to put all of these into use. Many will be able to follow one or two of them.

Roadside Selling.

Roadside selling has done much to prevent honey from dropping in price to a dangerously low level. Gleanings has persistently called attention to the benefits, but not all producers realize what can be done. At one of the eastern field meetings reference was made to a producer who had established several roadside stands and had sold in all over 100,000 pounds of honey. All that is required is good honey in an attractive package, properly advertised by means of a neat yet conspicuous sign. The five and ten pound pails are very popular packages for roadside selling. Honey should be exhibited in glass, however, for some customers will not buy in tin, and all like to see the color of what they are getting. It is a good plan to have an attractive card announcing that the same honey is sold in tin at a lower price.

The producer need not live on a main highway in order to sell honey by the roadside. He can erect a small stand on the main highway, establish someone in charge and keep the stand supplied with honey by trips morning, noon and night. It is an advantage to live on the main highway, of course, right close to the selling stand, for considerable sales may be made on days when the automobile traffic is too light to pay to have someone at the stand all day. A sign, announcing that the blowing of the horn will bring an attendant, will take care of the trade on days when travel is light.

If the honey stand by the side of the road is near a beeyard, the bees help advertise, of course, and the venture is more likely to be a successful one than if no bees can be seen. If the apiary is too far away to be seen from the road, a colony or two back a few feet from the stand will serve almost as well.



Where sales are heavy a booth at the roadside adds greatly to the comfort of the salesman. Note the words ''Pure Honey'' on the beehives.

A common mistake at a roadside selling stand is having but one sign and that right in front of the stand. The rapidly approaching automobile is usually far beyond before the driver can stop. There should be an attractive sign several hundred feet away from the stand on each side, announcing that pure honey is on sale so many hundred feet ahead.

Talking Bees and Honey in Schools.

Any man or woman, *if interested in honey*, can talk honey at high schools. Simply take a screened hive of bees right into the schoolroom and by lighting a smoker, get the curiosity of the boys and girls aroused to the very highest pitch. A few facts should be noted down beforehand to introduce the subject, and the questions that the boys and girls ask will pave the way for further remarks. Tell them that there are three kinds of bees, that the worker bees wear their wings ragged in a very few weeks so that they are no longer capable of producing at the highest efficiency. Explain that the queen can lay one and one-half times her own weight in eggs in 24 hours. Tell them that the drone has a grandfather but no father. Show that the sweet substance in flowers is not honey but a syrup resembling cane sugar, that the bees invert this into real honey, which is not a tax on the digestive system of the human being. Be sure to say that honey is the most healthful form of sweet and that it is the safest commercial sweet. If possible, have two or three kinds of honey, each properly labeled, that can be passed around for sampling on pieces of paper or cardboard. Explain that only one main honey-producing plant ordinarily is in blossom at one time. Lay especial emphasis on the particular honey that is produced largely in the locality.

HONEY
FOR SALE

White lettering on a dark background can be read at a greater distance than dark lettering on a white background.

After a pretty vigorous smoking of the bees through the screened entrance until they begin to roar, carefully pry up one side of the cover and blow in more smoke across the top. Be sure the smoker is working well and use it rather more frequently than if the hive were being opened out of doors. Keep the bees down with smoke, while gradually loosening the frames. Lift out one of the central frames and look for the queen. When she is found pass up and down the aisles showing the queen and the bees, the brood, the honey, etc., to the students. A few bees fly about the room but, with a little care, no one need be stung.

What good does this do? An extensive producer in the West told me last winter that he shipped a car of honey to a certain city, intending to sell all of it at the stores. On his arrival he found the stores heavily stocked with local honey that was not moving well. He tried to sell his honey repeatedly but with little, if any success, until finally, seeing some children on the street, he allowed them all to sample his honey, and he began to tell them about the bees. Their eager questions gave him the idea of talking at the schools. He went to a member of the school board and told him that he would not do any direct advertising, but would just talk bees and honey if they would allow him half an hour in each of the schools. Obtaining his consent, he went to work. Within a few days honey began selling, and the stocks in the stores were exhausted. There was no difficulty in disposing of the entire car of honey.

It pays to create new users of honey. Children crave sweets. Teaching them to like honey is doing them a favor.

HONEY
HONEY
65¢
PURE HONEY
FOR SALE
50¢

An attractive roadside display commands attention.

Demonstrate Honey in Stores.

Pick out one of the most prominent groceries and make arrangements for a good window display of honey, with possibly a one-frame observatory hive containing the queen and a card underneath, reading, "Can you find the queen?" On a day when sales are likely to be the heaviest, or several days for that matter, "demonstrate" honey. Tell the story of honey, how pure it is, how healthful it is. Have some pictures, showing the process of extracting honey. Mix honey with butter, about equal proportions and give away free samples on crackers. The combination costs less than butter alone, and tastes better. Also give samples of straight extracted honey on crackers. If you think you can afford it, have a freezer of ice cream and give away very small portions of ice cream on paper sauce-dishes, with a little extracted honey poured over the cream. Sometimes a near-by druggist can be induced to advertise a "Honey Sundae." If you have not tried this yourself, you have no idea how delicious it is. When giving out samples, secure the help of some young woman, dressed in white, to prepare the samples and to wait on the people.

The Value of Local Associations.

The man who is the greatest menace to selling honey is the man (and every community has one or more of them) too careless to read bee journals and too indifferent to become a member of the beekeepers' or honey producers' association. I do not wish to give the impression that I am against national associations or state associations. They have their field, and rightly organized and managed, they accomplish great results. I do feel, however, that the importance of the local association has never been properly recognized. By local, I mean a county, or a community represented by two or three counties, or a part of a state. These local associations can accomplish almost unlimited good in many ways, not the least of which is the grading of honey, whether comb or extracted. It has always seemed to me that the dues of such an association should be large enough to make possible some work along this line. The secretary can know personally almost every member, and, if this secretary is wisely chosen, his official stamp of approval will go a long way with buyers, especially if the locality can be given some honest, sincere publicity. If a state is small, a state association can function along this line just as well as a local association. I recall several instances where two counties have formed an association, which has done a very creditable piece of work. There are also tri-county associations, membership in which is a real asset to any beekeeper.

One producer can not do very much with a neighbor who persists in selling honey at too low a price. An association, on the other hand, can most effectually meet this problem. Right now I know of one instance where a local association is getting after a producer (not a member of that association, not a reader of bee journals, therefore not very well informed on market conditions), who is peddling excellent white clover honey in five and ten pound pails at 10c a pound, a most glaring example of the folly of retailing honey at a price below what most buyers would pay for the honey in carlots. In another state a producer is peddling fine comb honey at 20c a section. Join your local association and help educate all local producers so that there need be no such menace to the industry at large.

Remember that selling expense is a legitimate part of the cost, and that it costs to sell just as it costs to produce. The smaller the quantity sold, the higher the selling price should be. Boost the per capita consumption of honey by creating a new consumer demand. Sell honey by the roadside. Talk honey at schools. Demonstrate honey in stores. Join your local association and do all in your power to make it a live association. Preach the value of honey as a food in season and out of season and practice what you preach.

Vermont field meeting. West Pawlet, Aug. 12. A member of a live association will not retail honey at a wholesale price.

THE MARKETING PROBLEM

Importance of Uniform Packages, Proper Publicity and Well-selected Channels of Distribution

By E. G. Le Stourgeon

Manager Texas Honey Producers' Association

Certain considerations that always enter into all marketing plans are difficult to apply to the marketing of honey. Yet they must be well understood before we can hope to solve our problems.

One of these is the proper package in which honey is to be packed, especially if it is contemplated to have the co-operation of the retailer in its distribution. This involves standardization of package and limiting the number of sizes and kinds. For retail distribution a standardization of retail price is also essential. With many men of many minds producing honey and not agreeing among themselves as to the cost of production, and many not even knowing what it costs to produce a pound of honey, this is an extremely difficult problem.

The unit quantity of comb honey has been pretty well determined by the universal use of the one-pound section, but the unit price at which it should be sold to the consumer has never been sufficiently standardized. In extracted honey both considerations are still unsettled, and, therefore, the problem is much farther from solution.

Another consideration to be taken into account is the proper appearance of the product when offered for sale. Too much honey is offered in unattractive, often repulsive and at least poorly labeled condition. This tends to lower the chances of any honey being looked upon with favor by the consuming public. Each beekeeper is a law unto himself in the size and style of package and often pays no regard to the vital matter of appearance.

Next comes the need for proper publicity back of the package, and this includes a policy of co-operation with the dealer. We see many commodities sold under attractive brands and standards because of such publicity. The sale of honey has miserably failed in this consideration, and such failure has been the most serious drawback to our success as merchants of our product. Almost every district in every state produces some honey, and usually no more individuality of price, size and appearance has entered into its sale than in the sale of such products as eggs or garden produce. Here and there some nationally or locally advertised and properly packed and standardized brand is offered, but the earnest efforts of the packer are soon set at naught by the senseless and foolish competition of the local producer, who floods the market with a nondescript offering at ruinous prices which are arrived at without regard to cost of production or expense incident to packing and marketing.

What Is the Best Method of Distribution?

The final main consideration is the proper method of distribution to the retailer. A correct solution of this will depend upon a greater measure of co-operation than has been heretofore shown by beekeepers, since concerted action and the collecting and dissemination of information concerning trade conditions and tendencies are necessary.

In my opinion the laborer is worthy of his hire, and the jobber or retailer, who takes the risk of sale of the products he carries in stock, is entitled to his reasonable profit. It is manifestly unfair to the retailer of honey for the producer to continue, as so many beekeepers do, to sell to the consumer in his neighborhood at the same price at which he sells to the grocer. In the same way it is unfair for the producer to sell to the retailer at the same price at which he sells by wholesale to the jobber. The retailer is the customer of the jobber, whose reasonable profit should be protected. The consumer is the customer of the retailer, and the profit of the retailer should be protected. In other words, a beekeeper should recognize and quote three different prices, if he sells to these three groups or links in the chain of distribution. If he does not sell to the wholesaler or retailer, but confines his sale to the consumers only, he should remember that he is himself doing the work of these important factors, and should add to his price enough to repay him for his effort in packing, labeling and selling. This should be enough to cover a reasonable profit and the cost of doing the business of those who are handling honey in this territory.

The "Spread" Between Producer Price and Consumer Price.

I will not attempt to say what the "spread" shall be between the cost of producing a ten-pound pail of honey and the sale price to a consumer. Many factors that are determined by local conditions and trade customs enter in. The problem can be approached only in a general way, and the suggestions made here are general.

Let us say that it costs 10 cents per pound to produce our extracted honey. This is a bulk price at which we could sell our honey, without containers, in carload lots to a bottler, and just come out even on our year's operation of the apiary. The labor, label and container will cost us, say 2½ cents. Our price to the jobber or wholesaler in resale quantities should therefore be 12½ cents per pound or $1.25 for each ten-pound can. The jobber's profit usually ranges from 10 to 12½ per cent of the selling, or list price, to the retailer. This would make the normal price to the retailer of such honey about $1.40 per can or $8.40 per case of six cans. The profit of the retailer is usually 20 to 25 per cent of the price to the consumer, and the retail price on this honey would probably be $1.75 per pail. Let us see how this looks:

Cost of producing 10 pounds of honey..	$1.00
Cost of packing, label and container..	.25
Cost of jobber or wholesaler.........	.15
Cost of retailer.....................	.35
Cost to consumer................	$1.75

Do not get the idea that the jobber makes 15 cents on every can of honey he sells. His profit is really infinitesimally small on each individual can. Out of the 15 cents he must pay drayage, rent, office expense, salesmen's salaries and a dozen other costs. His ability to do business at all rests wholly upon volume. Neither does the retailer make 35 cents on every can. His costs are proportionally heavier because his sales volume is smaller and in addition he has greater risks of all kinds.

Let us consider, for a moment, honey packed in glass and in smaller containers than the ten-pound pail discussed above. As the container becomes smaller and more expensive, the "spread" becomes automatically greater because new factors of cost enter in. Labor is proportionally greater, the container is enormously more expensive, and the costs of sales mount. It costs the retailer practically as much to make a sale of a one-pound jar as it does to sell a 10-pound can because his sales are all unit sales anyway. In fact, we sometimes find that the 10-cent honey we have been considering has to be sold as high as 40 cents per pound in certain expensively labeled and attractively packed pound jars, especially if freight and transportation charges enter in, and this without anyone making an undue or excess profit on any of the transactions. All these matters should be given thought and study by the producer who sells his own product.

When the Producer Becomes a Merchant.

The business of producing is one thing; the business of marketing is another. When the producer becomes a merchant and sells his own product he should have, and should insist upon having, the wages of a merchant. This is common sense. Besides that, it is vital, if he is to establish a permanent and standardized market, that he recognize these facts and respect these profits. If he persists in selling direct to retailers at the same price the jobber pays, the effect will inevitably be that the jobber will no longer handle honey and the general distribution system will break down. If he persists in selling to the consumer at the price paid by the retailer, the latter will justly refuse to handle honey, and the means of distribution will in time become limited to the range of the peddling wagon of the foolish producer who has killed the goose that laid his golden eggs. The merchant is the best friend of the producer of any commodity. It is the merchant and the established trade channels that make economical distribution possible. Honey has never been over-produced; it has merely been under-distributed. The honey producer has been in great measure at fault for this, because, by direct sales in small quantities at ruinously competitive prices, he has discouraged the merchant from handling it.

Summary.

Let us resume for a moment some of our main considerations:

1. Standardization of retail package as to kind and style. This has been done automatically with comb honey, but is still a problem in the marketing of extracted and bulk comb honey.

2. Standardization of retail price. This has been impossible up to now because of the wide areas in which honey is produced and the lack of co-operation among beekeepers. Also, there has been a lack of the true knowledge of market and crop conditions.

3. Proper appearance of the package from the standpoint of attraction to the buyers. With many men of divers habits and minds packing the product individually, this has been a difficult problem.

4. Proper publicity back of the package, including general co-operation with the dealer. If this is ever done it must be done by some such concerted movement as the American Honey Producers' League.

5. The proper channels of distribution should be recognized and protected. To get honey before all buyers, it must be handled as a staple commodity and this brings us to—

6. The proper prices at which honey must be sold to jobber, retailer and consumer. The beekeeper who becomes a merchant must take into account his costs as a merchant and demand his wages for the service he renders. In doing so he will encourage the handling of honey by the regular trade channels and greatly widen his field of distribution.

The remedy is threefold: Co-operation, education, publicity.

Here and there are springing up groups of beekeepers who are organizing co-operative marketing associations that are rapidly solving, in their limited trade areas, some of these problems. Grade standards and package standards are being evolved, and more respect is being shown to the conventional channels of distribution. By their example and their persistent efforts to educate their neighbors much good is coming. The individual beekeeper, here and there, who is not in touch with these movements, must slowly become educated along these lines, and when really cognizant of the true conditions he will also become a co-operator.

For complete success ever to come, this education of the isolated individual is necessary. One beekeeper who produces 500 to 5,000 pounds of honey can absolutely demoralize the market of a whole group of beekeepers who produce 100,000 pounds.

Let one man persistently cut the price and disregard trade channels, and the whole distribution system tumbles in his locality.

Publicity must come by a conscious and concerted action of the whole. By publicity, I mean the dissemination of knowledge of the true value of honey as food and the creation of a desire on the part of the consumer to purchase it. Such publicity can come about only through joint action, and my threefold remedy thus resolves itself to the one idea of co-operation. If beekeepers learn the fundamental principles of marketing and distribution, aid in giving publicity to our product, and co-operate with our various sales agencies, our problem is solved.

San Antonio, Texas.

SHIPPING COMB HONEY

How to Pack Small Lots as Well as Car Load Lots to Prevent Breakage

By E. R. Root

ONE may have his shipping cases factory-made, or ever so perfect, and yet have his fine comb honey shipped in them broken down. As a rule it is not advisable to send such a product by express, although it can be done. The experience of the writer has shown that comb honey sent by freight not only goes through at a less cost, but in much better condition. Much will depend on whether comb honey is sent in carlots or in less than carlot shipments.

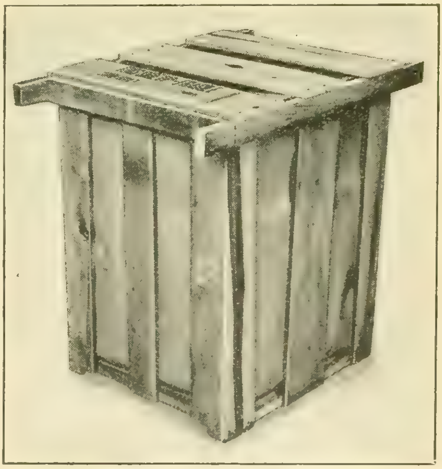
How to Ship Small Lots of Comb Honey.

As a rule a single case of comb honey or half a dozen or a dozen of them can not be sent without being put into a special carrier or crate. No matter how modern the cases may be, with plenty of corrugated paper for top, bottom, sides and ends, if they are sent uncrated, either by freight or express, there is almost sure to be a breakage and leakage of the comb honey. Where a customer wants a single case, or a couple of them, they should be put in a box large enough so that they can be well packed all around in straw. Comb honey is seldom shipped in less than four to eight cases at a time, making an aggregate weight of not less than 100 pounds. The carrier or crates that are ordinarily used will take eight cases, or the equivalent weight of 200 pounds.

The carrier here shown is lined on the inside with paper to conform to the rulings of the railroad companies. On the bottom is then placed six or eight inches of loose straw evenly distributed, when the cases are piled in, one on top of the other, until the carrier is level full, four single-tier cases deep, of 24 pounds each, and two cases long. The paper is then neatly folded over, after which the cover boards are nailed in place as shown in the cut.

The carrier is so big and heavy that it can not be picked up by the freight-handlers and dumped or thrown. The handles sticking out suggest the method for moving it, and that means two men, to pick it up and carry it wheelbarrow fashion. Two can easily pick it up and move it from truck to car, and from car to truck, and from truck to destination with perfect ease. Such a carrier will go either by freight or express — preferably by freight without breakage or leakage. If 500 or several thousand pounds of comb honey are to be shipped, carriers like those here shown should be used. While they entail some additional expense they insure safe delivery of the honey, save loss from breakage and leakage, and leave a pleased customer at the other end of the route.

In many instances the beekeeper can and should carry his own comb honey with his own truck to his near-by towns and cities. On bad roads, in a common wagon with no springs, plenty of straw should be put in before loading the honey; but usually an automobile truck is provided with springs, which, in connection with pneumatic tires and careful driving, will insure safe delivery without any carriers or crates or straw in the bottom.



This carrier practically insures safe delivery of comb honey. It has a cushion of straw at the bottom and is lined with heavy paper to keep the cases clean.

It sometimes happens that all the local

markets in the towns near by, as well as the cities, are more than supplied with comb honey, so that the honey must be sent to a distant market, too far away to deliver by truck. In that case, less than carload shipments should be sent in carriers.

How to Ship Comb Honey in Carlots.

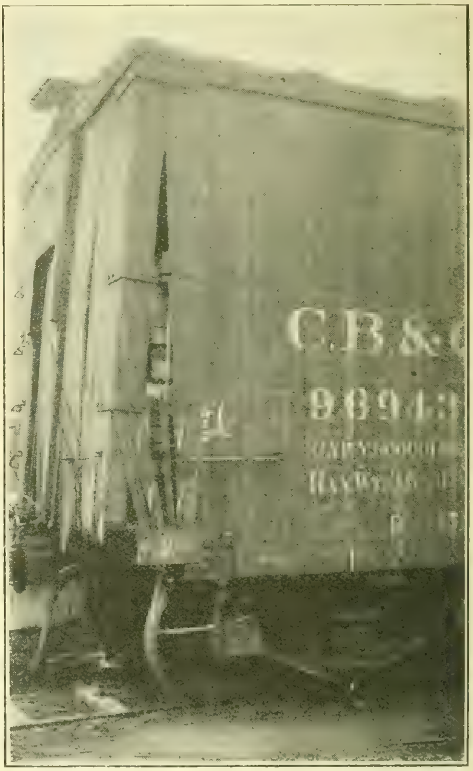
When sending honey in carlots the carriers are not needed. The railroad companies should furnish a strong serviceable car that will stand rough usage—one that has not been used for carrying phosphate, wool or live stock. A wagonload of straw should be provided in advance. The floor should be swept out when the car is ready. The cases of comb honey should be neatly piled in the car one on top of the other, and of even height, like cord wood, until the whole car is filled within a foot or 18 inches of each end. It is not advisable to pile the honey up higher than about eight cases single tier, or four cases double tier. It is important that the cases be piled snugly against each other, in such a way that the combs will be parallel with the track beneath.

Any intervening space left on the sides next to the car should be filled in with crating, boards, or straw tightly wedged in. There is not a great deal of side movement in a car; but it is important to provide for a slight amount of it. The intervening space of 18 inches at each end of the car should be filled in with closely packed straw. This can not be packed in too snugly. The purpose of the straw is to provide against serious end shocks due to stopping or starting of the train. It sometimes happens that a car of comb honey is shot ahead on a switch; and unless a man is on top of the car at the brake the car may be jammed into another one. It is, therefore, important to see that the end spaces at the end of the cases in the car are cushioned with tightly packed straw. To keep the straw from working up at each end, thus allowing end shock between the cases, boards should be put over the top of the straw and held down by cleats on each side of the car.

Should there not be quite enough comb honey to fill the car it would be well to leave the space next to the doors, and fill in with very rigid bracing made up of 2 by 4's fastened in such a way that they can not possibly work loose.

Many and many a car of comb honey sent long distances has had a heavy breakage, caused by carelessness on the part of the shipper or by his inexcusable ignorance in not seeing to it that the comb honey was packed solid and properly cushioned at the ends and sides of the car. The shipper should make up his mind that his comb honey is more fragile than eggs in egg-carriers: that it is relatively heavy; that the railroad companies en route will give his honey the heaviest end-banging it has ever had. He must play safe. While he may recover damages from the railroad company, the process for doing this is exceedingly long and difficult, with the possible and probable result that the railroad company will get out of paying for the damage, or it may pay a merely nominal sum.

Perhaps in all beedom there is nothing more aggravating than a car of broken-down comb honey. If it is sent against a draft attached to the bill of lading, the consignee is likely to refuse payment. It lies on the tracks while telegrams are flying back and forth; and, even though a compromise be effected, no one is satisfied. In the mean time robber bees get busy, and sting the railroad men who are trying to "clean up." This is not all. Foul brood may be scattered far and wide. So, be careful, Mr. Beekeeper.



This is what may happen if the ends of the car are not cushioned with straw. The car received a hard bump and the honey pushed out the end of the car.

The subjoined illustration shows what happens in a good many cases when proper provision is not made for the end shocks that must inevitably occur when the train stops or starts. When comb honey, heavy as it is, is jostled about in the car, say the space of a foot or more between the cases, and the cases slide this way and that, the inevitable result is a breakdown. Possibly the whole end of the car may be shoved out as shown in the cut.

THE MILLER MEMORIAL

How it Can be Made the Finest and Best Beekeeping Library in the World

By E. F. Phillips

FOR several months notices have appeared in the bee journals asking beekeepers to contribute to the endowment of a library of beekeeping literature in honor of a man who is beloved by beekeepers throughout the world, the late Dr. C. C. Miller. Hundreds of contributions have been received and acknowledged, and considerable interest has been shown in this movement. The contributors have been induced to send in money primarily from the fact that it is a pleasure to all of us to acknowledge in this way our debt of gratitude to Doctor Miller.

I should like to point out the great good which the proposed library may do for the advancement of beekeeping in this and other countries, and in this way to show the value of the movement. There are published in the various countries of the civilized world a large number of journals devoted solely to beekeeping. The Bureau of Entomology receives a few of the more important ones from foreign countries, and various college and university libraries subscribe to some. A small number of individual beekeepers are subscribers to a few of them. Yet the fact remains that there are probably bee journals of which not a single copy comes to the United States, or if they do come they are not kept and are not available for general use. We can not ignore the fact that from time to time all these journals contain articles of great interest and value, and it is a pity that there is not some repository in this country in which all these journals may be permanently filed ready for use. This the Miller Library can do with a little effort. If the library were confined solely to the obtaining of bee journals of the world, it would be one of the finest additions to beekeeping facilities that one could imagine, and would constitute a worthy monument to the man whom we wish to honor.

Since the invention of printing, innumerable books have been published on bees and beekeeping, how many no one knows, but it runs into the hundreds and thousands. A few libraries contain a considerable number of the older books, especially those which at the time of publication were printed in large numbers. Some college libraries have started collections of this kind, and there are a number of individuals who, through their interest in bees, have collected such books. There is today no place in the country where the beekeeping books are collected to a degree which is adequate, and here again the Miller Library should be able to surpass any previous effort in this line.

I can hear some practical, hard-headed individual speak up and ask what good it will do to have all this old stuff gathered together. We have, it is true, good practical books on beekeeping which are quite satisfactory as guides for apiary work, and we have books which go into the more scientific aspects of the subject. Yet one can scarcely read any of these older books without getting something good from them which is not contained in the recent books. Furthermore, to understand our present status in beekeeping we ought to know the history of the art, and we do not get that by reading only the modern books and journals. For those who are engaged in work for the advancement of beekeeping, familiarity with the old literature is necessary to prevent blunders. Neither will it do for us to wrap ourselves in a mantle of satisfaction and decide that American books are good enough for us, totally ignoring the excellent work which has been done in other countries. Any one with the proper enthusiasm for bees will want to know all that he can about the bees and about the progress of the industry in other countries.

I want to see the Miller Library the finest and best library on beekeeping in the world, and I can see no reason why in a few years it may not outstrip every other library. I am eager for this because of the interest and value of such a library, and, because of a desire to see the memory of our great beekeeper perpetuated through the generosity of his friends. As a member of the committee which has had the raising of funds in hand, I deeply appreciate the words that have come in the letters which I have received with contributions to this fund. They all breathe a spirit of love for Doctor Miller, and it is a joy to get such letters. They are far more valuable than the contributions contained in them as an indication of the admiration which beekeepers have for Doctor Miller. Yet, if I may do so without seeming ungracious, I think I should add that we have not done half enough for this memorial. When we consider the value of such a library to the advancement of beekeeping, and especially when we weigh the value of the life and work of Doctor Miller to each of us, we ought to dig down deeper and make this library an outstanding monument.

It is not too late for contributions to this fund; in fact, it will never be too late. Since the fund will be invested and only the interest used for the purchase of books and journals, the fund will be a perpetual one to which additions can be made at any time. A contribution of twenty dollars will yield an annual income of at least one dollar, which in turn will make it possible to add one more bee journal to the list of those filed in this library. I believe that there are a number of individual beekeepers who would like to make such an addition to the library. A number of the associations have contributed liberally, but there are others which will not want to be lacking in an expression of appreciation of the worth of Doctor Miller and which will want to add their part to this great library.

The committee having this matter in charge has decided to locate the Miller Memorial Beekeeping Library at the University of Wisconsin, where it will receive sympathetic care and support. I should like to see this fund turned over to this institution with a larger amount than is at present at hand, and then I should like to see beekeepers look on this library as something to receive their constant interest and support, to which they will make contributions of money, books or journals, at any time when it is possible.

Several beekeepers of my acquaintance have some fine old books on bees, and I have some myself that I prize highly. When I get through with these books I can think of no better place to put them than a library of this kind. All of us who have taken the trouble to collect these books would rather have them kept where they will do good than to have them scattered and lost, and I suggest that we all put provisions in our wills to have our bee books sent to the Miller Library. I think it is not too much to expect that, as the years go by, the Miller Beekeeping Library will become one of the landmarks in American beekeeping, and I want to do all I can to make it great and valuable. There is no way that I can think of which will better express our appreciation of the life and works of the man in whose honor this is being established.

Washington, D. C.

CONTROLLING FOUL BROOD

Practical Methods of Keeping Down Infection in the Yards

By M. C. Richter

Honey production today must concern itself with American foul brood. This brood disturbance is going to follow the hive bee wherever beekeeping is practiced in the state. There is no absolute preventive for the disease, and every good beekeeper must know its symptoms and know how to keep it under control. When American foul brood has reached an advanced stage there is no excuse for not being able to recognize it. Our chief diagnostic trouble is during the time when American foul brood first enters a colony that already has been affected by European foul brood. The symptoms of American foul brood and sacbrood are quite constant, but the reverse is only too true in European foul brood. Ever so much time and trouble are saved in treating brood diseases after an exhaustive study of their symptoms has been made. Mr. Sturtevant has given us the latest regarding symptoms of the various brood diseases in the current May issue of this publication. It will be well for many of us to re-read this article.

General Considerations.

In control work we must ever bear in mind that, no matter how severe our preventive or combative measures may be, we are liable nevertheless to have the disease reappear at any time. We are able to keep it under control very nicely, and in our work we have in mind rather the "dollars and cents" standpoint than the possibility of complete eradication of the disease. For instance, we do not destroy partly drawn-out foundation taken from an infected colony although such a procedure may result in a two or three per cent infection of colonies to which the foundation was given. We feel that it is cheaper to shake two or three colonies in every hundred than it is to destroy a given number of frames of foundation. In other words, we must be guided by common sense and make our control work practical.

Sources of Infection.

We know that the source of infection is carried in the honey, and that the common carrier of this infected material without the hive is the robber bee. Any hive material that may be contaminated by honey from an infected colony and the brood-combs that contain the dried scales of American foul brood are likewise carriers of the disease. The beekeepers' paraphernalia also may be a source of infection.

There is yet another and important source of infection. It is the flight bee as distinguished from the robber. This matter will be discussed later.

How Spread.

The disease spreads within the colony by means of the nurse bees using infected honey when feeding the larvae. During honey flows the nurse bees use incoming nectar for this purpose, and under such conditions the disease makes little if any headway. It is during a dearth of honey, in poor years and more especially when stores are lowest in the colony, that the disease not only thrives but spreads rapidly. When an apiary has once been subjected to a source of infection any colony in the yard may harbor the infected material for several years before any diseased larvae appear. A single worker in but one trip may carry the spores, and several years later a single cell of honey may be uncapped by the bees during a lean year and fed innocently to healthy larvae. Entire apiaries, if permitted to pursue nature's course, will be destroyed after this fashion. And how is a beekeeper to know how and when his bees received the infection? Perhaps some picnickers lunched on bottled honey from some infected apiary, or more likely some wild (?) bees in a tree succumbed to the ravages of American foul brood.

How Controlled.

Under normal conditions we inspect the brood of our colonies from three to five times. Usually we make the examination twice in the spring, and again twice during the fall after the crop is off.

When a case of American foul brood is discovered, no matter at what season of the year, the infected colony is never shaken when found, but merely marked. As soon as a cell of American foul brood is discovered, the colony is left as it was before manipulation. There may be other infected colonies before the entire yard is examined, and, if so, these in turn are likewise marked. All infected colonies will be treated at the same time.

Having treated several thousand colonies affected with American foul brood, either as inspector of apiaries or as a purchaser of diseased apiaries, the writer wishes to state that a thousand or more colonies may be handled year after year with an infection not exceeding three to five per cent. A percentage of outbreaks as low as this does not hamper honey production. It must also be remembered that about 75% of the colonies that contract the disease do so in the spring of the year; that is to say, it is in the spring of the year when we detect the trouble. Colonies at this time after treatment differ in no wise from swarms in respect to the amount of surplus honey that they gather. In fact, cases of American foul brood that are treated in March produce considerably more honey than do April and May swarms when the honey flow comes in June.

So that not more than five per cent of our colonies contract American foul brood, it is necessary to adhere strictly to the three following statements:

1. Shake all cases within a day or two after detection.
2. Shake at the original location of the colony in the yard.
3. Shake only when there are no bees flying.

The above applies whether bees are shaken in spring, summer or fall. There are many other considerations in the control of this disease, but it is our belief that those mentioned above are the most important.

(1) No matter what the conditions of a colony may be, if it shows a cell of American foul brood it should be shaken without delay. Of course, if it takes two days to go through a yard, and but one case of American foul brood was found on the first day, we will wait until we have completed our work on the following day, before proceeding to shake the lone colony. Naturally this would be the logical thing to do, for one or more diseased colonies may be found on the second day. The point to bear in mind is this: A source of infection has been found in the apiary, and we know that the sooner we rid ourselves of this infection the better. The colony is shaken forthwith, and no other treatment whatever is practiced, for in our minds it is of the utmost importance to get the infected material out of the yards and away from the bees. If left in the yard it is ever a source of danger. Cattle may overturn the infected colony, the wind may upset it or even a woodpecker might peck a bee-space in a hive-body.

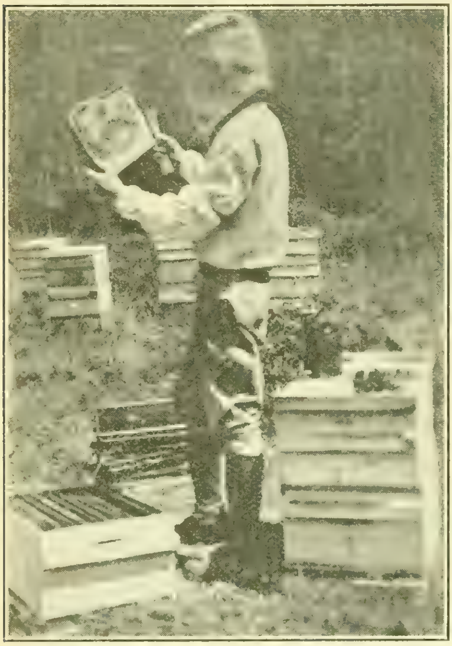
(2) The infected colony must be shaken exactly where it stands in the yard, and should not be removed to a hospital or elsewhere. Such a procedure is costly, a loss of time and not necessary to protect the spread of American foul brood. The reason for this will be pointed out directly.

(3) Most beekeepers shake their diseased colonies when bees are flying. It is the writer's opinion that they are making a very sad mistake. No matter how expeditiously the shaking treatment may be carried on, flow or no flow, there is bound to result a certain amount of confusion. While the operator is in the act of shaking a diseased colony, some of the bees of the colony will alight on adjoining hives. They will alight not only on hives adjacent to their own in the same row, but also on the hives in the row directly in front of them. Furthermore, the bees will not alight necessarily at other hive entrances, but may rest on the top or on some other part of other hives. After the colony has been subjected to treatment many of these confused bees do not find their way into their clean home and consequently are liable to carry infected material into neighboring colonies. American foul brood has broken out in this manner too many times to cast any doubt on the above assertion.

The proper time to shake is when there are no bees flying. It should be done either in the early morning or evening or on cold cloudy days. If we shake at such times we have not only done away with confusion but with robbing as well. There is one other point to observe; the clean hive must, as far as is possible, resemble the old home. It must be placed in exactly the same position as the old home, and, if the old hive was two stories high, then the new abode must likewise be two stories high. In other words, we have brought about conditions so that when the bees are able to fly they will behave but very little differently from a newly hived swarm. It might be mentioned that, from an American foul brood standpoint, it is wise to space all colonies eight feet apart in the apiary.

How to Shake.

We prefer to treat the bees before day break, for after treatment the little clusters about the hive are better able to adjust themselves as the day approaches than would be the case during night. The cut shows a diseased colony having been pulled to one side, with the entrance pointing towards the old stand upon which sits the new hive. The diseased colony is drawn either to the right or left so that the approaching or waning light, as the case may be, falls on the combs while the operator looks for the queen. The new home has an excluder between the bottom-board and the brood-chamber and another excluder between the brood-chamber and super. The brood-chamber contains always full sheets of foundation and if the colony be strong, the second hive-body likewise should contain foundation. Otherwise the two or three hive-bodies, as the case may be, are empty. (The size of the new home, it will remembered, should conform to that of the old. The reason for having the upper excluder is to prevent the bees from clustering and building comb in the top hive-body.)



The diseased colony is moved aside and a clean hive placed on its stand. Each comb is then examined as taken out before shaking until the queen is found, for she is to be placed in the hive between the excluders to prevent absconding.

When the hives are in position the cover of the diseased one is placed flat upon the ground directly behind the operator. As the combs are lifted out they are examined for the queen, shaken in front of the new hive, provided that honey does not shake out (otherwise the bees are brushed off), and then piled on the removed cover, taking care that no honey runs upon the ground during the operation. As soon as the queen is found she is placed in the brood-chamber, and then the brushing or shaking can proceed more rapidly. After the first hive-body is emptied it is likewise placed behind the operator, and, as the frames are taken from another hive-body, they are placed directly in the super just emptied. After the last hive-body is emptied of comb the bees are shaken from it and from the bottom-board. The bottom then is placed behind the operator away from the bees and the empty super upon it, into which are placed the first complement of combs that were removed from the diseased hive and which were laid temporarily upon the top. The excluder, bee-brush (always made from grass, etc., and never used a second time) and other hive-bodies go on next. Finally the top is placed on, taking care that the side upon which the frames rested is placed on the inside. The old hive is then made bee-tight and cleated so that it will withstand a trip on the machine to the pesthouse.

In the event that the queen was not found during the above treatment, she is looked for later on the underside of the excluder. When located the excluder is simply inverted. Often on treating colonies in the evening it becomes so dark that we merely shake and do not look for queens until the following morning. Should a diseased colony possess a virgin, the queen-excluder over the bottom is omitted. Occasionally we detect a case of American foul brood in a queenless colony and if such a colony be weak or badly affected, we take it to the pesthouse and destroy it. Otherwise, we may give it a chance to mate a queen before applying treatment.

When shaking late in the fall and during the absence of a flow, we employ precisely the same treatment and let the bees starve for about two days before we remove the foundation and give them capped honey. A few days after shaking during inclement weather in spring, we treat shaken colonies similarly to swarms by giving them Demuth feeders several days later. Throughout the entire process of treatment great care must be exercised not to spill any honey in the yard. About 10 days after shaking, the colonies are examined and the excluders removed.

How to Clean Infected Materials.

All infected hive parts from the yards go into a bee-tight pesthouse. A two-frame extractor handles what honey the combs might contain, and the frames then go into a steam vat where most of the wax is removed. After this treatment they are dipped in boiling lye water. For the past six years we have disinfected our frames, tops, bottoms, excluders and hive-bodies after this fashion. All hive parts are submerged in the boiling lye for at least one minute, and, as the solution weakens after two hours of use, a third of a can of lye is added (we start with two-thirds of a can in a Herschiser press), and the time of treatment is extended for about half a minute.

Big Sur, Calif.

FROM THE FIELD OF EXPERIENCE

FUTURE MARKET PROBLEM

Comsumption ot Honey Could be Increased Tenfold by Organized Effort

There are in my county approximately 125 beekeepers of whom 6 may be classed as honey producers, that is, those who have for sale any surplus worth mentioning. Probably this ratio will hold good throughout states east of the Mississippi River. If, by any means, the other 95 per cent can be transformed into actual producers, what will be the effect upon marketing conditions? Perhaps, owing to the inefficiency of the average individual or to lack of interest, it can't be done. But, in view of the fact that the present wholesale price of honey is below the cost of production and the trend of prices is downward, why continue propaganda for more beekeepers? The ''criminal waste of nectar'' which we read about has been due almost entirely to the fact that production in many localities has not been profitable. Thousands have tried it and failed. But with the enormous increase in acreage of alsike and sweet clover throughout the middle states, many localities, hitherto unproductive, will become productive of large quantities of honey. It is apparent that the supply in eastern states will soon exceed the demand, and our western brethren will not find it profitable to pay freight to eastern markets.

I believe that the only rational solution of the problem is for beemen to back an organization that will effectually increase the demand in every state for our product. Let us work, not for more beekeepers but for better beekeeping and more intelligent marketing. The American Honey Producers' League should receive the support of beemen everywhere in creating a local demand for honey through proper national advertising. There is no good reason why California honey should be shipped to New York, and Ohio and Indiana honey sent to Arizona and other far western states. Then there should be producers' organizations in every state, working in conjunction with the national league, to see that honey is advertised locally in every city and town and that every grocer is constantly supplied. Let's put extracted honey in 5-pound and 10-pound pails, and emphasize the fact that it is a food rather than a medicine. The consumption of honey in homeopathic doses should not be encouraged.

Judging from the results of several years of local advertising and the pushing of sales in larger packages, I am confident that ten times as much honey would be consumed if producers could hold together, properly organize and do business in a business way.

Valparaiso, Ind. E. S. Miller.

AN ARGUMENT FOR HONEY

Deadly Germs Which Cause Intestinal Diseases in Man Cannot Live in Honey

W. G. Sackett, Ph.D., Bacteriologist of the Colorado Agricultural College, Fort Collins, Colo., has made some important experiments, the results of which were published by the station in bulletin No. 252.

Professor Sackett scientifically introduced the organisms known as the ''typhoid-colon group'' into pure honey, with the following results:

''*B. Typhosus* was no longer present in the pure honey after 24 hours.'' This is the germ which causes typhoid fever.

''*B. Paratyphosus* (*A* and *B*) were dead in pure honey after 24 hours.'' These germs cause diseases very similar to typhoid fever.

''*B. Fecalis Alkaligenes* was killed in pure honey inside of five hours.''

''*B. Proteus Vulgaris* died out in pure honey after four days.''

''*B. Suipestifer*—the culture was dead in the pure honey on the fourth day.'' The presence of this germ is often ''characterized by chronic broncho-pneumonia followed by Septicemia.''

''*B. Lactis Aerogenes* died out in pure honey on the fourth day.

''*B. Coli Communis* died out in pure honey on the fifth day.'' The presence of this germ is said to become ''pathogenic in the case of ulceration in typhoid fever. It may enter the blood causing peritonitis.''

''*B. Dysenteriae*—ten hours' exposure in pure honey was sufficient to destroy this organism.'' As the name well indicates, this is the germ which causes dysentery.

''*B. Enteritidis* was dead in pure honey in 48 hours.''

The remarkable thing about this investigation is that, while honey is consumed in a raw condition, it is not only not a ''carrier'' of these deadly germs except for a few days at most, but that it absolutely destroys them within a short time if they are introduced into the honey in any way. When we eat honey we may be assured that we are not exposing ourselves to infection. When we consider that many of the death-dealing bacteria mentioned above are readily carried into the human system by water, meat, vegetables and milk, we are inclined to look upon honey as being in a class by itself, so far as ''safety'' is concerned.

Professor Sackett well says in his summary, ''The longevity of the typhoid-colon group in honey is very limited. The probability of honey acting as a carrier of typhoid fever, dysentery and various diarrhoeal affections is very slight.''

Many of our most scientific physicians and best-regulated sanitariums have long persisted in prescribing honey and in recommending its use freely by those who are well in order to keep well and by those who are sick in order to get well. Perhaps these wise men have long known the germ-destroying power of honey. Who knows but that the wise Solomon knew a few things when he advised his people to "Eat thou honey because it is good."—Prov. xxiv:13.

A "wise one" of much experience said, "If you have any sort of kidney trouble, cut out all forms of sweets except honey, and see what will happen."

Madison, Wis. H. L. McMurry.

A PLUCKY WOMAN BEEKEEPER

A Representative from South Africa Visits the Home of the Honeybees

About a year ago we received a letter from Miss Ada E. Pullinger, Grabauw, Elgin, Cape Province, South Africa, one of the leading beekeepers of the Union of South Africa, asking if it would be possible to receive her as a student in bee culture at our Medina apiary. She said that she would be willing to take hold of the work if we would give her the opportunity. There was something about her letter that indicated not only real love and enthusiasm for the bees, but that she was a person of superior intelligence. As a general thing we do not take students in our apiaries; but I told our people that here was a person to whom we could make an exception to our general rule. A cordial invitation was extended; and in due time, after some six weeks of travel by boat and train, she arrived at Medina from her far-off home.

Miss Ada E. Pullinger of South Africa at the Home of the Honeybees.

When she first came I started to give her instructions in the rudiments of bee culture, thinking she was, perhaps, a beginner. But it did not take me long to discover that she knew as much about bees as I did. All she wanted of us was to see and learn how we handle bees in America, particularly at the Home of the Honeybees. She proved to be an apt student, winning the admiration and respect of all who came in contact with her.

She could take a severe stinging better than any other woman I ever saw. She was absolutely fearless. She took hold of hard work, and even brought down a swarm from the top of a ladder. She did more than her share of the work.

She not only carries on beekeeping operations on a large way in South Africa, but she is quite an extensive poultry-raiser. She has carried off first prizes, not only on bees and honey, but on fancy poultry, at South African shows.

She spent several weeks with us, and then took a trip to Washington to make a visit to Dr. Phillips, of the Bureau of Entomology. She went back to her home with the best wishes of all those whom she met. Gleanings hopes it may have the privilege of hearing from her from time to time.

Medina, Ohio. E. R. Root.

FERMENTATION IN HONEY

How this Trouble Can be Avoided by Proper Ripening and Heating

Fermenting honey on the hives or elsewhere is rare hereabouts, regardless of when it is extracted. In one instance within my recollection, a producer extracted every six days, tanked it in the house, and there was some fermentation, which was remedied when the tank was placed out-of-doors in the sunshine. In my own locations, there is seldom a very heavy flow; so we prefer to tier up, and if we get a little behind with our work, sometimes it is practically all capped. However, it is a fact that with this tiering up, in an arid climate, there may not be so much capped honey as when not tiered so high, though the honey will be ripened better. By tiering up in this way the bees are ready for a heavy flow, such as sometimes comes for a few days; while on such occasions, the man with a scanty supply of supers on the hives may lose heavily from lack of storage room.

In the Salt River Valley of Arizona, under some conditions, the ripening honey in the hives will ferment and even run out of the entrance, after which work by that colony ceases, unless the sour honey is extracted. This honey is heated after ex-

FROM THE FIELD OF EXPERIENCE

tracting, and is then of fair quality. Some say that, if a small field of alfalfa in bloom is irrigated and then stock turned in to graze, a sour smell can be noticed as one drives by, and at such times particularly, the sour nectar is gathered.

This season I shall run the honey over an evaporator containing hot water, steam-heated, with perhaps a few steam pipes just above, to dry the air. To stop fermentation? No. But to enable me to begin extracting sooner and probably thereby controlling swarming better during our first flow, and at the same time, continue to produce a superior article. When our second honey flow arrives I will no doubt have a considerably greater number of empty supers ready to handle a heavy flow, if such a flow should materialize, than would be the case if I waited to hive-ripen every pound of honey gathered during the first honey flow.

Where souring is common, such a pan would be a profitable investment. I pump the honey up several feet into a clarifying tank, where it separates on the gravity principle, most of the wax, etc., floating on top and remaining there until skimmed at the close of the day's work, and a pipe carries the honey to the tanks where it further settles and clarifies until ready for canning. The bottom of the extractor is also double and heated a little with steam, so the honey is very readily pumped; in fact, with this warm honey, I feel sure that one of the small pumps will handle the honey from several extractors.

During part of 1920, we ran two eight-frame extractors, side by side, the honey from both discharging into a small pump tank between the two. One extractor had no heat applied, the honey from the cold extractor blending and mixing with the warm honey from the machine with the double bottom. One ¾-inch pump often handled three tons per day, and could handle far more, and does it with no great amount of power. A single heavy duty two horsepower electric motor furnished ample power to run the extractors and the pump; there is some advantage in the arrangement, as one extractor acts like a fly wheel and aids in starting the other, both never being started at the same time.

Meridian, Idaho. E. F. Atwater.

* * *

PAY WAY THROUGH COLLEGE

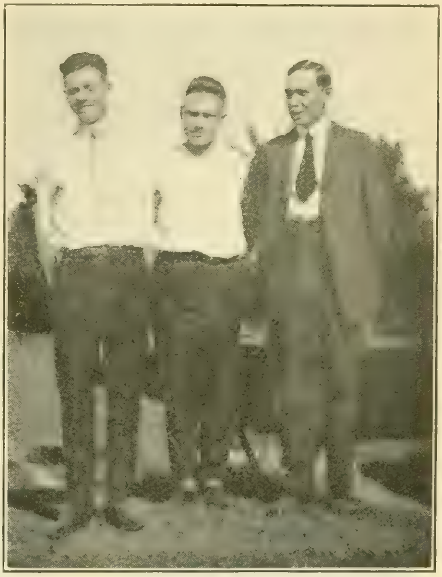
How Two Boys Earned Enough to go to College from One Small Apiary

Six years ago my older son graduated from high school and had a great desire to go to college. We had 23 colonies in the back yard. They gathered a ton of honey, which we sold and sent the boy to Hanover College, paying his expenses and $40 over.

The following spring we had 24 colonies, which gathered about a ton of comb honey, and this, with the $40 from the previous year, paid the boy's way the second year.

The boy taught in the high school in the college building the next year, and the money from the bees purchased a Ford car.

For four years in succession the bees from 23, 24, 35 and 41 hives gathered a ton of honey, which paid more than his expenses for four years at collage.



D. F. Rankin and his sons. These two boys are paying their way through college from the profits from the bees.

He and his younger brother, who is now a junior in Hanover College, have now a love for the blessed bees and know how to manage them profitably.

The older boy came home from college at week ends last spring and managed the bees so that not one of the 40 colonies swarmed. On June 10 the second boy came home and reared queens in artificial cells and requeened most of the colonies. Our increase was 25 colonies, and the crop about a ton of honey. D. F. Rankin.

Hanover, Mass.

[The new president of the Pennsylvania State College is another good example of the boy who earned his way through college by producing honey. He was a native of Essex County, N. Y., living on the west side of Lake Champlain, almost opposite the home of J. E. Crane, with whom he often consulted as a boy.—Editor.]

FROM THE FIELD OF EXPERIENCE

SELLING IN THE HOME MARKET

Folly of Asking 80 to 120 per cent Above Wholesale Price When Selling Locally

If I buy a couple of tons of hay in the home market of my neighbor within hauling distance, I expect him to sell it within 10% of his price for a whole stack. So do you. If he sells me a whole hog, I get it for about the same money the butcher would pay. We deal direct, for cash, at bulk prices. No lost motion, no transportation charges and no risk. What is wrong about that? And if the butcher takes half a dozen hogs the same day we load out a carload for Kansas City, he pays no more.

But if we honey producers sell 5 and 10 pound pails of honey to local retailers, many of us ask them 80% to 120% above the wholesale price. (See Gleanings, May, 1922, p. 281.) I take it the wholesale price of extracted honey is for honey in 5-gallon cans, two to the case, f. o. b. local railroad station.

It certainly does not cost more than two cents a pound extra in 5-pound pails uncased. I believe, if we ask local dealers more than about three cents per pound over the wholesale price, we are stupid business men.

If the wholesale price for extracted honey is 10 cents per pound, this nets 8 cents for the honey alone. Small containers, two and a half pounds and up, cost from three cents a pound down. Eight and three are 11. I have no respect for the mental quality of those who quote wholesale the price as 10 cents and charge local dealers more than 60 to 65 cents for 5-pound pails. I sell at 60. The dealers can sell at 75 and make 25 per cent. I can sell at the same price at home.

And if any think the local store price to customers should equal that of honey sold first by the carload, hauled a couple of thousand miles, rehandled and repacked and finally shipped back by local freight, I think that such belong in Bedlam.

Laplata, N. M. Harrison H. Brown.

[The quotations on large lots by producers, on our market page, to which Mr. Brown refers, are understood to mean the price when the entire crop is sold in one lot or in carload lots, and not the wholesale price. The beekeeper in splitting up his crop to sell to local dealers should charge more than when his entire crop is sold in one lot, to cover the extra cost of selling in this way. When all the selling costs are counted, a case of two 60-lb. cans would have to be sold for two or three cents per pound more than the carload lot price in order to break even. —Editor.]

If every honey producer would employ two boys like these to sell honey in the local market, the honey crop of the country would be sold in short order. The boys are selling and delivering for Mrs. J. L. Irwin, Montpelier, Indiana.

SIFTINGS

J. E. Crane

REFERENCE is made in an editorial in August Gleanings to marking the net weight on sections of comb honey. Laws making this necessary are quite recent, and it is not surprising that beekeepers do not fully understand either the law or the necessity of complying with it. At first it seemed quite an unnecessary hardship or at least an unnecessary burden laid on beekeepers; but, after weighing our sections for a few seasons, I confess I like it, as it enables us to have all the sections in each case of even weight. So burdensome to many beekeepers did the law at first seem, requiring the weight of sections to be stamped or printed on the section or carton that covered it, that they had printed on cartons, "Not less than ten ounces," and then proceeded to pack without weighing, throwing out only the lightest. But it is not so hard a task as might at first seem. An active man can weigh out from 5,000 to 6,000 sections in a day and place each weight by itself. It can be packed uniform weights in each case, and dealer and consumer know just what they are buying.

* * *

If 12, 13, 14 and 15 ounce sections are all labeled "Not less than 12 ounces" they would doubtless all be sold for the same price, and whoever buys the light weights would have to pay some 25 per cent more for his honey than the buyer who drew a 15-ounce section. Is this right? It must be a great satisfaction to any honest retail dealer to know that every comb he sells is full weight and every one who buys will be treated equally well.

* * *

One of the charms of a journal devoted to the interests of beekeepers is to learn how other beekeepers manage their bees, what their pasturage is and how the bees behave under different conditions. M. A. Gill tells on page 515 that "swarming ceases when the main honey flow begins"—exactly the opposite of our experience here in the East. This year young queens will in many cases quickly fill all space available with brood and prepare again to swarm. The abundant flow has seemed to make them swarm-crazy.

* * *

On page 527 Ira D. Bartlett informs us that, when supers have been piled high at this season, with cool damp nights, fermentation is liable to start "if not removed to the honey-house; and even there they must not remain long, but should be extracted and sealed in tin cans or other tight containers within a short time." I can not help wondering if such honey will weigh 12 pounds to the gallon, or if extracting and placing in tight containers will altogether prevent fermentation. Mr. Bartlett is quite too good a beekeeper to recommend putting up any but first-class honey, yet we have bought quite too many tin cans of honey that had fermented enough to injure the flavor, to make us shy of anything that contained any unripe honey.

* * *

E. F. Atwater gives a novel way, on page 519, of taking honey, by going as soon as it is light in the morning and removing filled combs and returning empty supers and so preventing robbing, a very good way no doubt. But a man living less than a thousand miles from here can go him one better or worse, for he went even before it was light to one of our outyards and removed 20 or 25 supers and did not stop to shake off the bees. One hundred dollars has been offered for information that will lead to his apprehension and conviction.

* * *

In M. A. Gill's article on pages 515 and 516, he makes one or two statements worth our attention. For one thing he advises stripping off supers before the close of the season. The leaving of supers on until the honey flow is over and then leaving the brood-chamber full of brood and little honey will almost surely injure the colony for the next year, and account for many failures. What he says of wintering on two stories corresponds very closely with our experience.

* * *

E. M. Cole, on page 519, says he is able to save combs not in use from wax moths, by the assistance of spiders. I have tried it but have not been so successful, perhaps for lack of a sufficient number of spiders. It is worth testing out. I find a tight box, in which to pack combs loosely, and a small quantity of carbon disulphide a sure remedy.

* * *

It is said to be only a step from the sublime to the ridiculous. However this may be, I am quite sure that when honey is displayed at "28c a cake" and soap close by it at "5c a cake," it places the honey at a very decided disadvantage, as R. K. Rickard observes on page 532.

* * *

I am always fascinated by Mrs. Constance Root Boyden's racy letters from southern California. The climate, productions and ways of living, so different from the East, makes it seem like a fairyland, which we never weary of hearing about.

* * *

Ice cream cones, says G. H. Buffum, page 518, are an excellent way to advertise honey at fairs. It would seem to be especially good for introducing granulated honey.

Midsummer Days in My California

CONSTANCE ROOT BOYDEN

(Stancy Puerden)

PLEASE let me use that possessive pronoun again. You may take it to mean that "My California" is southern California, the coast belt, our own particular location or that I see the whole state through glasses which glorify it. For some reason that pronoun gives me a feeling of freedom in writing of the state.

In the days past when we used to discuss plans for moving out here the head planner of the family used to end by saying, "I am not sure you could stand the summers, Stancy." I shared that doubt so fully that all last winter, when we were shivering in an inadequately heated rented house, I looked forward to the long "semi-tropical" summer with such dread that I was thankful to be too cold.

Maybe it is too soon to speak with certainty, but up to this time (Aug. 1) we have had few uncomfortably warm days in the shade and the nights have been deliciously cold. Cool is hardly a strong enough word to describe nights when wool blankets are a necessity, and one often puts on winter wraps for evening riding. Perhaps the bracing air of the nights is what causes the mocking birds to practice their vocal exercises so assiduously. I don't mind bird music at night, even when it is just outside our windows and rather loud; but when the mocking birds urge us to "hurry up, hurry up, hurry up" for hours at a time in the middle of the night it is irritating although their voices are melodious. It isn't a guilty conscience or an over-active imagination which makes me think they are telling us to hurry, for my unimaginative husband hears those words too.

Although the days are rendered delightful by the ocean breezes which come from the south or southwest about ten o'clock and persist until sunset, the cool nights are so free from wind that casement windows and doors will stand out into the room at any angle without awakening sleepers by unexpected slamming, and this is true in spite of the fact that we always have open doors and windows throughout the house for cross ventilation.

We have been told that July is the month of the year when rains are least apt to occur here. Possibly just to keep up its reputation for the "very unusual," this year the weather treated us to a real thunder shower in the middle of July. There were lightning and loud thunder, especially toward the mountains, but only a few large drops of rain, enough to make me run for my typewriter and various other possessions on the trellised porch, but not enough for the weather bureau to measure. And before daylight on the morning of July 31 a gentle rain fell for half an hour.

ANOTHER reason for dreading the summers in the Golden State was because I feared the lack of rain meant the loss of so much of the beauty of winter and spring. Here is where "My California" is a delightful surprise. It is true, hillsides which were green have turned a soft brown; it is true, Old Baldy's crown of snow has dwindled to the point of invisibility from the valley, and the mountains generally retreat into the distance behind a softening haze, while flowers are less abundant except where watered.

But there is so much beauty of a different sort left. In the place of barren brown vines, pruned back to little more than stumps, vineyards are all luxuriant, green leaves with bunches of green grapes showing among them; orange groves are bright with new leaves, and many of the other broad-leaved evergreens are renewing their foliage. The acacias, which were greenish-gold fountains of bloom in the early spring, are beautiful in a different way in the summer. There are varieties which bloom late in July, but my favorite, which is very fine when in bloom in early spring, is especially beautiful now. Its finely cut foliage is blue green with a soft gray cast in a certain light, and the effect of the whole tree is feathery and graceful.

A few days ago we wandered on to a road high on the Verdugo Hills on the southwest side of La Canada Valley. The road follows the curves of the hillside among beautiful estates, and on either side of it are planted these blue-green acacia trees. Far down in the valley one could see Flintridge with its curving drives, its country club and green golf course, and beyond, across La Canada where it merges into the broad San Gabriel Valley cut by the deep gorge of Arroyo Seco, could be seen Altadena nestling at the foot of Mt. Lowe. And the great range of mountains in the background was tinted soft rose, lilac and blue, and the air was so clear that the observatory on Echo Mountain stood out distinctly and the trolley line from that point on up Mt. Lowe could be traced. It is one of those views which makes one long to have all his friends present to share it.

Acacias are not alone in possessing that blue-green foliage. California is particularly rich in plants, shrubs and trees of that tint. At this time of year the leaves of the young eucalyptus shoots are a silvery blue green, forming a pleasing contrast to the golden green of the camphor trees and the deep green of many others.

Just as unusual to eastern eyes as the acacia is a tree with foliage like delicate ferns with deep blue or purple blossoms which come in July. A large tree in bloom looks as if great bunches of violets were scattered thickly among its fern like leaves, and where these trees are planted on both sides of an avenue the effect is wonderful, especially when seen against a distant background of sunset-tinted mountains.

IF May is the month when nature seems almost wickedly extravagant with flowers in California, then midsummer is a time when, aided by man with his irrigation, she is equally extravagant with fruit. You know how tantalizingly short the strawberry season is in the East. We have been enjoying frequent strawberry shortcakes for over two months back, and might have had them before that if we had felt justified in paying the price. And we are told we may continue to enjoy them as well as green peas until Christmas, although I think the price will again be prohibitively high in a few weeks. Even if it is, we think we are pretty fortunate to enjoy nature's finest berry for nearly four months in succession.

And soon after the strawberries and along with them came gooseberries, raspberries, currants, loganberries, blackberries, fresh figs, apricots, peaches, plums, fresh prunes, muskmelons, watermelons, pears and apples, for there are high valleys cold enough in winter and warm enough in summer to grow the finest apples. I think the season of most of these fruits is a little longer than in the East, and the season of the various fresh vegetables is also long. Strange to say, tomatoes seem to be no earlier than in Ohio, although they have long been on the market from Imperial Valley under an extremely high price mark. And such grapes as the Concord are no further advanced than they are in Ohio at this season.

A few days ago we drove through picturesque Laurel Canyon and came to a point where the San Fernando Valley was spread out before us. I am positive the land of Canaan never looked richer or more beautiful than that valley. We live in a region in the San Gabriel Valley where the citrus fruits predominate, and, while it is beautiful at all times of the year, just now the fruit display is not so wonderful as in the San Fernando Valley or at least that part of it around Lankershim. We drove between miles of orchards, apricots, dusky red peaches of unbelievable size, translucent plums of red and gold, gold and green and deep blue, all with untouched bloom on them, groves of enormous, wide-spreading English walnut trees, melons of all varieties and further on great fields of corn. And across the fertile valleys were the velvety blue Verdugo Hills, with the peaks of the higher range showing beyond. You see I never can omit the mountains from any description of "My California."

This article should be accompanied by a photograph showing some of those fruit trees with dozens of props supporting their laden branches. At every few rods along the boulevard the passing motorist was tempted by fruit displayed in baskets, crates and "lug boxes." There was such congestion at the regular fruit stands that it was offered for sale at many points between, generally beneath the shade of a wide-spreading walnut tree or perhaps a pepper tree. We have been rather pained and surprised at the high prices of fruit in this fruit state, but one often can pick up fruit and vegetables at bargain rates at these stands out in the country. It gives one a practical reason for urging her husband to take her for drives, you see.

ONE evening I noticed an advertisement of "Honey brannies" in the paper. It contained a testimonial from a man who had eaten a honey brannie in warm milk every evening at bedtime, thereby reducing his "too, too solid flesh" and greatly improving his digestion and health as well. (I don't believe they would reduce a thin person. If they improve the digestion they should merely tend to keep one in normal flesh.) The next morning I inquired for honey brannies at our near-by grocery and was informed that the grocer had not heard of them but had "sweet brannies" on hand. Of course I asked him to get me some honey brannies, and in the meantime bought a box of sweet brannies and found by the leaflet in the box they were made by the firm who advertised the honey brannies. The next afternoon I enticed the busiest man I know to help me hunt the firm of Genevieve Jackson, Inc., which manufactures the brannies with several other health foods. We found Genevieve Jackson, Inc., to be an enthusiastic young man. I believe he secured a position with Genevieve Jackson and worked up and finally bought the business.

These brannies are made of bran, not the chaff-like variety which is sold in cartons, but bran which includes enough of the grain to have considerable nutriment left in it. Combined with the bran is a little agar agar, a Japanese seaweed, and the whole is slightly sweetened to make it more palatable, pressed into oblong wafers and then dehydrated instead of cooked, thereby retaining its soluble minerals and vitamines unchanged.

The business is just in its infancy and until very recently has done practically no advertising, but people who came to southern California for their health bought the brannies, liked them, went back to their eastern homes and induced their grocers to handle them, with the result that I saw a map of the United States well dotted with black pins, indicating in what cities brannies may be purchased.

What is of particular interest to beekeepers is the fact that the honey brannies were made in response to a popular demand. The president of the company said he had received hundreds of letters, asking for a brannie without sugar, and I believe part of them requested that he use honey in the

(Continued on page 611.)

Beekeeping as a Side Line

Grace Allen

HOW full life is! One great glad morning last spring I was watching the bees on the stonecrop, the pink mossy three-fingered, or perhaps I should say three toed, crowsfoot, that grows so gayly on poor shallow rocky soil like some of ours (not all, though). I was sitting on a low flat rock in the middle of it, idly counting the bees, and feeling something at once strangely stirring and gently soothing, all alone there in the sun-lit quiet, when a sudden whirr of wings made me instantly all attention and very still. Right there, almost where I could reach her with my hand, came a little mother bird—unidentified, unfortunately, though she's none the less happy—nor am I, much— for my not knowing her name. There she was, with a wiggly breakfast for the younglings in their cosy nest among the buckbrush, close beside me. After she had flown off on another foraging trip, I parted the branches and saw the queer little babies, so unlovely in fact and so lovely in promise—and thought how some human souls are that way; just give them a little more time, a little more love, a little more sunshine, a little more strengthening of something wing-like—and watch the divineness come; and soar off towards God. I thanked the bees for stopping me there, feeling as though a shining little extra drop of joy had been poured out that spring morning for my drinking.

Another bird incident was not due to the bees, though, but to the former owners of our bungalow, who, worried lest the water pipes in the basement freeze, had wrapped them most fantastically with rags of every color. Where one of these sagged down into a bit of a pocket, quite private and undisturbed, a darling, darting, funny little wren feathered her nest and reared her nurslings. You see, living thus in the country—how proudly I still say it!—we leave things pretty much open, it is so convenient to have garage doors standing wide when driving home. The garage is connected with the basement, so through the open doors the wren had found her cosy rag-hung opportunity under the water pipes. When we discovered her, "Now," we asserted in high glee, "we have to leave the doors open—for her; and for the little chappies later learning to fly." And what excitement the day they did fly out! They took the basement by storm.

Bees on Hop Clover.

Do bees work lespedeza? This question has been answered in bee journals by both yes and no. Personally I don't know—I've never seen them. But do bees work hop clover? This I do know, for this locality, for this season; by the unanswerable fact of having seen them work it. This was a poor season here for white clover, last year's drought having killed most of it; we had really only scattering patches of young clover from seed. But a good succession of rains kept minor sources blooming more generously and steadily than usual, and the bees found them all and called them good. One day about the first of June, coming home from somewhere—I'm always coming home from somewhere!—I stopped to gather daisies. They were so nearly all gone, who could resist those last ones? The particular field I wandered through was humming gently in the sun. It was bees on hop clover. They weren't fighting over it, you understand, yet you could see them all around on the tight trim little yellow blossom balls, gathering nectar. I didn't know it was hop clover—I must admit that—until the Head of Agriculture at Peabody College so identified the specimen I took in next morning. And he was backed up by the Biology man.

(I can't remember having ever seen hop clover listed among nectar-producing plants. It is not in my old A B C nor in Pellett's "Productive Beekeeping," nor in a very recent list of Tennessee honey sources compiled by Mr. Buchanan. I had expected to get back my "Beekeeping" books by Dr. Phillips and Mr. Pellett, both of which were loaned out to my class—and look it up before copying this, which was written several weeks ago. But meantime life led me so heart-breaking a way that all such matters were forgot. The books are still out—and this must go off today. What about hop clover, anyway?)

Driving Home from the Beeyard.

How long it does sometimes take to drive a Ford a mere mile! Especially if there happen to be "two of us." (Remember how Festus cried out to God?—"There are two of us!") And particularly when bees are thick on sweet clover and blackberries are getting ripe! And still more particularly, when those very two sowed that very sweet clover! For they must stop again and again to exclaim about the height of it and the bloom of it and the bees on it. More, O many, many more, than had been on the hop clover. Swarming on it, the layman would say. As for blackberries, how good things are that you pick yourselves, wild things ripening along a country road, that you gather and eat when you ought to be hurrying on home and getting dressed for company. (Yes, they got there when only 50% of us was ready! But think of the delight we had had and the memories woven into the very fibre of us by that one short drive from the beeyard home. And the company didn't mind. They said so.)

Veils vs. No Veils.

Some few beekeepers wear no veils at all. Like Dr. Sanborn of Vanderbilt University. Most of them wear veils steadily, when actually at work. Most of these, however, will occasionally open a hive or two, unveiled, especially colonies of known gentle disposition. Small colonies and nuclei are apt to be less resentful than full crowded hives, with a lot of spirited field workers hurrying in and out. So, like the young lady in the picture, one often opens such a hive without a veil. But one is wise to wear a veil, and have a goodly volume of smoke at hand, when investigating full-sized colonies.

[Beginners especially should be cautioned about handling bees without adequate protection. There are times when it is reasonably safe to handle even strong colonies without a veil, and with some gentle strains of bees even without smoke. The danger is that a beginner, not knowing that bees that are gentle at one time may become quite cross at another, may get into trouble without a veil.—Editor.]

"The Friendliness of Beemen."

The very first thing I ever wrote for Gleanings had that for its title. And what is finer in all this world of uncounted fine things than friendliness? And how friendly all beekeepers are!

This young lady gets along very well without a veil but most beekeepers wear veils when actually at work in the apiary.

One day last July a card came saying that Mr. and Mrs. D. C. Scott of Caney Spring, Tenn., with several members of their family and Geo. G. Anislie. government entomologist, would be driving through the country the next day, and were planning to visit us at our apiary; and inviting us, the "two of us," to join them in a roadside lunch. On the appointed day, a hearty voice over the telephone, calling from near our yard, said, "Well, we're here." I jumped into the car and sped over to join them—Mr. Allen, office man that he is, being unable that day to come out to join us. There were wayside introductions and then on the warm grass under the hackberry trees in the little grove between the beeyard and the road, we broke bread together—good homemade bread, too, and fried chicken and good country ham and peach pie and a lot of other things—more, oh much more, than even six grown-ups reinforced by three happy children could dispose of. So Mr. Scott's daughter fixed up a picnic plate for Mr. Allen—and "Um-m, that's good country ham," he said.

Mr. Scott, in spite of his grandchildren, is a young beekeeper of three years—full of enthusiasm and the delight of the apiary. I am afraid he was scandalized beyond recovery to learn that I knew only one kind of Miller queen cage, the kind I have—No. 2, I think he said. I had really thought a Miller cage was a Miller cage! So it was a profitable as well as a pleasant day for me. Mr. Scott has some good ideas of some experiments he is going to try in wintering. (Hasn't it been a long time since I have referred to wintering? You can't tell—I may start it again—or I may avoid it forever!) Mr. Anislie is a beekeeper, too, or has been, anyway. So we had a pleasant and all too short chat, ranging from Miller cages to foul brood in Tennessee.

After the party broke up, the three cars ran over to the bungalow and stopped for a few minutes; part of us walked down to see the Hubam, and then, with gay goodbyes and a wave of the hand, they were gone, headed toward the curve in the road where the Lone Oak stands, on their way to Granny White Pike and Radnor Lake. Once more—and how happily!—I had known the friendliness of beemen.

Published by Request.

[By request we are republishing Mrs. Allen's beautiful verses written soon after Dr. C. C. Miller's death and first published in her department in November, 1920. It seems fitting to republish this now, since this issue contains the announcement of the location of the Miller Memorial Library, and Sept. 4 is the second anniversary of the death of this great beekeeper.—Editor.]

How you would love this hour! The morning mist,
All touched with gold and blue and amethyst,
Goes rising slowly, lost somehow in light,
And lo, the sun-tipped hills break into sight!
Does Death come so? Do tender earth-born things
And human love, however close it clings,
Dissolve at last and rise and pass away
And show great hills of light, and God, and Day?

The golden peace of autumn lies around.
You loved it, too, and most, perhaps, this sound
Of bees that hum, whose frail undaunted wings
Fill wond'ring souls with strange imaginings.
Is peace around you now, so great, so deep,
That we who do not know it call it sleep?
Are wings there, too, God-made of dream and fire,
That leave ungarnered no divine desire?

Today this earthly beauty grips me so
I wonder what new radiance you know.
Such haunting music fills our quiet places—
What symphonies ring down unbounded spaces!
Not ours to ask—ours but to dream the dream,
Ours but to keep the high-held torch agleam,
Ours but to walk in reverence and pride
Because you lived, and loved and smiled, and died.

FROM NORTH, EAST, WEST AND SOUTH

In Southern California.—Considerable honey has been sold, and buyers say that there has been enough honey offered for sale to make it unnecessary to go out to look for any. The price has been going from 6½ to 7c for the light amber to 8, 9 and 10c for the white sage and orange. The market seems steady, with prospects of getting stronger as the more anxious ones get their honey disposed of.

The affairs of the Beekeepers' Exchange have been turned over to M. H. Wells, assignee. Mr. Wells represents the First National Bank, that institution having financed the Exchange. All of the members have received their statements and with few exceptions are willing to pay back the money they were advanced in excess of the amount the honey sold for.

Some beekeepers are moving to the beans; but, after a season like the present, when every beekeeper has made a crop, the desire to move for the chance of more honey is not nearly so general as in those years when the crop is short or in many cases a failure.

Crops seem to have varied from a can or 60 pounds per colony to two cases or 240 pounds (for a very few of the best beekeepers). Here, again, the cost of production will be a factor almost impossible to determine accurately. Some of us must produce a crop almost entirely with hired help. This ranges down to one man and his wife, who have produced over 50 tons of honey without a day's assistance, at the same time doing considerable work on their fruit ranch. This woman did all of the work in the extracting-house and, so far as we know, holds the world's record for uncapping and extracting a crop of honey by herself. She used an eight-frame Cowan extractor and engine. The honey was all brought to a central extracting-house. We may tell more fully of some of the manipulations and work of the man later. His methods and short cuts come from close observation and the ability to apply the things he has learned. His average per colony will run over 260 pounds, spring count.

With an abundance of bloom, such as is seldom seen throughout southern California, the yield of honey from the wild buckwheat was as near a failure as one could well imagine. How to account for this is not easy to conjecture. It seems to be just one of the freaks of nature that will happen. Other flora seemed to furnish nectar in abundance; especially was this true of the black sage. During our long experience in southern California, we recall only one season when this plant produced as abundantly and as long as this year. One beekeeper said that the frost cut all of the first bloom that year the same as it did this year. His idea was that the frost might have something to do with the great flow of nectar.

Corona, Calif. L. L. Andrews.

* * *

In Northern California.—From all parts of our section the spring flow was very late in starting. This was to be expected owing to the cold winter and spring. The flow was of short duration, however, and very few districts reported any appreciable surplus. The cold spring was not propitious for plant growth, and the natural honey flora was incapable of furnishing its usual surplus of nectar. Sage was particularly disappointing, while fruit bloom, mustard, wild radish and likewise others yielded nectar very sparingly. The summer flow from our mainstay, alfalfa, is now on, and is being utilized by a majority of beekeepers. The fall flow is problematical. Normally, good spring rains insure a fair fall flow from the plains; but, during the past spring, which it will be remembered was very backward, we had extraordinarily late rains in the valleys. Undoubtedly the fall plants will be late in blooming, and, if good bee weather does not extend well into October, the blooming periods of the late flora may also be curtailed. Usually but not always, when a season starts out abnormally like this one, it finishes very much after the same fashion.

During good years when we are kept busy most of the time extracting honey, we are very apt to neglect the bees to a certain extent; that is, some of us do not pay enough attention to requeening, nor do we attend to several other little things that are quite necessary. Apparently these matters are overlooked or lost sight of to a certain extent. When lean years come we have ample time to requeen all colonies, which, by the way, is our first duty. We ought also to level up all colonies, do a little painting and mending, weed out some of the older combs, and, another important thing, make as much increase as we possibly can. It is a very good plan to cut down increase, double up the weak and produce honey in good years and, to go the limit on "increase" during the bad seasons. Orange and sage producers could be benefited immensely by following this plan, since they have a source of honey which not only is always salable but in addition is under their control, owing to the restricted areas in which the plants are grown.

I regret to announce that C. D. Stuart of Chico has resigned as secretary of the California State Beekeepers' Association. It will be remembered that Mr. Stuart, who is also a certified public accountant, has offered to assist his fellow beekeepers in keeping better beekeeping books. It is a generous offer, and this important phase of our work needs someone like Mr. Stuart to arouse our interest. How many of us, aside

FROM NORTH, EAST, WEST AND SOUTH

from keeping bees for the pleasure which they bring us, are making a fair profit? R. M. Randall is now acting secretary of the association. Correspondence, I believe, should be directed to the organization's headquarters at Hutchinson Building, Oakland. M. C. Richter.

Big Sur, Calif.

* * *

In Texas.—It is often said that prosperity comes only through adversity. The meeting of the Texas Beekeepers' Association at College Station, Texas, July 25 and 26, was attended by a far larger number of beekeepers than the meetings of former years. During the first session a roll call was held at which each beekeeper gave a report on the honey crop condition in his section. This report showed that the honey crop of 1922 will be the smallest in years, but it also showed that the beekeepers were very optimistic and more devoted to beekeeping than ever before. Some few localities reported fair averages, and the beekeepers in the cotton section have their crop yet to gather, so that, after all, Texas may make a fair crop.

J. D. Yancy of Bay City, Texas, gave one of the best papers that has been read before the association for many years. Mr. Yancy's location is unique in that it lies along the swamps at the mouth of the Colorado River and some of the larger creeks that enter the gulf in the same vicinity. Mr. Yancy is one of the few beekeepers that has made a study of his honey flora and manipulates his bees so as to take advantage of these flows. His description of the relationship between his bee-work and honey flows was extremely interesting. Mr. McKee of Valasco gave a very unique description of his beekeeping activities. He does his beekeeping by boat. He owns a line of out-apiaries, located on the banks of the Brazos River extending 60 miles up the river from the gulf. Mr. McKee described his system of visiting his outyards, using his boat as an extracting-house and hauling his honey in a barge towed by the boat. Messrs. Yancy and McKee are both barrel-honey men. They find that this method of packing honey is the best adapted to their use, as the proximity to salt water causes tin to corrode very rapidly. W. O. Victor gave his experience in making increase with bees. The discussion which followed this paper brought out some very interesting facts relative to Texas beekeeping. The majority of those present desired to know how to manipulate bees without making increase, and the answers to this question gave some very unique methods of swarm control that are in use among the Texas beekeepers. Will Zimmerman explained the workings of his system of bee management with his universal hive-body. He illustrated his talk with his hive-bodies themselves. Dr. M. C. Tanquary, assisted by his force, gave a full report upon the inspection work and the experimental apiaries. E. G. LeStourgeon of San Antonio reported upon the activities of the Honey Producers' Association.

A number of other interesting papers were given and the beekeepers voted the 1922 meeting a complete success.

The weather condition for the past month has been normal summer weather. The honey secretion of the cotton plant has given yields far beyond its accustomed limits. It is believed by the beekeepers of southwest Texas that the chaparral plants are coming into a better condition than for a number of years.

In connection with the work of the experimental apiaries, a few colonies of bees were placed at seven of the sub-stations of the Experiment Station, and beekeepers were surprised to find that the bees on the sub-stations at Spur and Lubbock, which are located in the northwest section of the state where beekeeping is unknown, have done extremely well. H. B. Parks.

San Antonio, Tex.

* * *

In Wisconsin.—Knowledge mostly comes to us slowly, but your correspondent gained considerable knowledge and lost two perfectly good hive-bodies and several inches of skin today in one second. This morning while fumigating some hive-bodies with carbon bisulphide I thoughtlessly brought a match near two of them. Naturally, the result was an explosion which completely demolished the hive-bodies and frames and almost demolished the writer. While unable to move about freely, I am still able to write.

Contrary to reports, Wisconsin does not have a bumper crop of honey this season. As a matter of fact, the indications are that the crop is only fair at the present time although the fall flow may increase production in some parts of the state. In the vicinity of Madison the honey flow is practically over, leaving the beekeepers with a surplus of from 50 to 75 pounds and in some cases even more per colony. The crop was secured about two weeks earlier this year than last; and it is evident that the marketing season has now started, as a number of beekeepers in the state have started peddling honey at 15c per pound. This is always sad news to the beekeeper who is trying to get a fair return for his labor and product; but in the end practically every beekeeper is able to dispose of his crop, and the few beekeepers who cut prices do not seem to hurt local conditions a great deal. The situation in Wisconsin seems to be improving generally. More and more beekeepers are writing in, asking about prices and also expressing a desire to engage in co-operative marketing. Reports from other districts show that clover bloomed very abundantly in all sections of the state, but that it did not secrete as was expected. Continued cool weather during the daytime was probably the cause. In central and southern Wisconsin a good deal of clover was frozen out, and no crop was secured in spots except from white clover. The eastern counties seem to have suffered the most, although within the last two weeks a light flow is reported as coming in from sweet clover. In Fond du Lac and Dodge counties, the clover yielded fairly well. In Washington County the yield was light. Reports from Waukesha and Milwaukee County indicate a poor crop for that region. One beekeeper at Waukesha reports bees working quite steadily on alfalfa bloom. Basswood has behaved about as usual, blooming very heavy in practically all sections but yielding a surplus over only limited areas. Basswood trees on high ground did not seem to yield much surplus, although bees were at times quite abundant on the trees. Goldenrod is reported as coming on with a heavy bloom, and the bees are starting out as though they would be able to gather a surplus.

The most important feature of Wisconsin beekeeping at the present time is the reduction in the amount of foul brood through the area clean-up campaigns being carried on by the State Department of Agriculture.

The summer outing of the beekeepers was held at Bay Beach, Green Bay, Wis., August 7 to 11. As usual the beekeepers came from all parts of the state, and even some from adjoining states. Probably no greater array of national beekeeping authorities was ever present at a summer meeting. All of our beekeepers expressed themselves as being paid many times over for the cost of attending the meeting.

During September Wisconsin beekeepers should be very careful to see that the bees have plenty of stores for winter. In those sections where no fall flow occurs the bees cannot help but be short as there seems to be a much greater tendency to extract close, and there is bound to be a longer period than usual when no nectar will be coming in from the field. This is especially true of nuclei started toward the end of the honey season, and many of these will surely starve before fall if not given stores at once. About the first of October all colonies should be gone over, and those not strong enough to winter well should be united.

Madison, Wis. H. F. Wilson.

* * *

In Utah.—The conditions in northern Utah have been very favorable so far this season. August is generally our best month for surplus, and all colonies now should be strong and well stocked with brood and honey. What the bees make from now on will be mostly surplus.

The inspector from the Uinta basin, where usually big crops are gathered, reports that the solitary bees, ground bees and other wild bees are so numerous that they have consumed the honey resources of the country to such an extent that the crop there will be very light. As a remedy, he advises plowing the ground where they live. Isn't this something new?

Utah will not raise so much honey as last year, taking the state as a whole, and, as all old honey has been consumed or gone forward to other markets, these facts, together with the advanced price of sugar, should hold prices as good as last year, or better. While the local demand is very good, honey is not moving quite up to normal, on account of the stringency in money matters, and as yet there have been no calls for carload lots. The quality, this year, is very fine in body. color and flavor. Utah is a great consumer of honey, and the demand will increase when the farmers begin to realize on their crops. M. A. Gill.

Hyrum, Utah.

* * *

In Oregon.—Early reports indicate that the honey crop in Oregon has been average, if not slightly above average. This is especially true in central Oregon and in the Umatilla District. In the Willamette Valley the clover suffered considerably from lack of rain and yielded relatively little nectar, but considerable nectar from the other plants has been harvested of a darker and inferior grade. The market seems to be about normal for this time of the year, which is ordinarily very quiet.

No doubt most of the good beekeepers of Oregon will remember clearly their serious winter losses of the past winter, and will be making careful preparations for the coming winter to avoid a repetition of last year's fatality. However, there are many who will forget, and it would not be out of place to emphasize again the importance of right preparation for wintering, which here, as everywhere, includes a strong colony of young bees, ample stores and sufficient protection. In order to have the large force of young bees, it must be remembered that the colony must be headed by good young queens with favorable conditions to build up a colony during late August and September. The importance of having sufficient stores should also be emphasized. In this milder country bees naturally consume a larger amount of stores than in a colder section where they are not enticed out so frequently by fine weather.

In addition to giving the bees some form of protective covering, we must not overlook the importance of having the bees located so that they will not be subject to prevailing cold winds. More beekeepers than ever are talking winter protection, and many are making definite plans to give their bees much needed protection in some form. There is no question but that the bees would come through winter in much better condition if some protection was given.

Good wintering will do much to eliminate European foul brood, since the colonies which come through winter strong will be in a better condition to throw the disease off when it does appear. Many beekeepers, including the writer, are finding that the strong colonies show symptoms of European foul brood as soon as many of the weaker colonies, or sooner; but it is the writer's observation that these stronger colonies, when headed by good queens, are almost sure to rid themselves of the disease when a moderate honey flow starts, while the weaker colonies are overcome by the disease. Some beekeepers are reporting favorable results from stimulative feeding to assist the strong colonies in throwing off the disease.

The writer, as secretary of the Oregon State Beekeepers' Association, has been appointed superintendent of the Bee and Honey Department of the State Fair, and elaborate plans are being made to put on an educational exhibit which will be well worth while. H. A. Scullen.

Corvallis, Ore.

* * *

In Pennsylvania.— At this date (August 1) the white honey flows from all sources are gone, and the crop generally over the state is one of the smallest I have ever known. Some of the better beekeepers report a fair crop, while others have little or none. Excessive swarming has added to the beekeepers' difficulties. In the last few days I have seen new swarms starving and egg-laying at a standstill in many colonies. In eastern counties a heavy flow of honeydew is helping over this dearth, but does not make a cheerful outlook for winter. Bees having honeydew and wild aster honey for winter stores should be fed about 15 pounds of syrup made of granulated sugar and water, about 75 per cent sugar to 25 per cent water. This feeding should be done about the time egg-laying ceases, which will be late September or early October.

Unusual interest is shown in better wintering. This is a good indication for the future of beekeeping in Pennsylvania. Those who winter outside should prepare the packing cases in September and pack the bees any time after the honey crop is gathered. About the time of the first killing frost is right for packing bees, even if brood-rearing is still in progress. Better have the bees warm enough so that they will hang out after packing than to let the work go until freezing weather. They will go inside when cool weather comes. Feeding can well be done after the bees are in the cases, by leaving off the top packing and feeding from the top inside of an empty super. We prefer the five to ten pound pail with numerous perforations in the cover, inverted over the frames, to any other type of feeder.

The idea of the two-story hive with the top one full of food, a young queen reared in August, a good cluster of young bees and a good packing case is taking hold here. Those who have their bees so fixed this fall have already solved the winter and spring problems and largely settled the question of a honey crop next summer.

Several new bee-cellars have been constructed this year, which are especially suited to northern Pennsylvania conditions. Deep under the ground, so that there is little change in temperature and no ventilation, is the idea being used. The food for cellar-wintered bees must be of the best.

Little interest is being shown regarding the honey markets, although the beekeepers are hopeful of a buckwheat honey crop. It would seem that prices should remain about the same as for last year. Geo. H. Rea.

State College, Pa.

* * *

In Michigan.— Reports received in this office indicate a fair crop in the northern portion of the southern peninsula, practically complete loss of the clover flow in the upper peninsula due to a heavy frost during the blooming period, and a very moderate crop in the southern portion of the state on account of drouth during the blooming season, followed by cool rains. Some portions of the Thumb district have a very indifferent crop. Other portions report from 40 to 70 pounds per colony. Although very little honey was carried over from last season, some beekeepers are sacrificing their honey crop far below market prices. Every effort is being spent to encourage beekeepers to inform themselves of market conditions and obtain a fair price for their honey. The prospect for a fall flow from goldenrod, asters and other swamp flowers is very good, provided we have sufficient rainfall and warm weather during the coming month.

The summer meeting of the Michigan Beekeepers' Association, which was held at Alpena July 26 and 27, was well attended. A. I. Root and Huber Root both attended and appeared on the program. Michigan beekeepers feel that they were especially honored to receive a visit from the dean of American beekeepers, as his health does not allow him to visit many meetings in the North. His personality and address were inspiring. His recounting of associations with Langstroth, Quinby, Wagner, Doolittle and others emphasized the wonderful progress which has been made in beekeeping during the last 50 years.

The program of the "Area Clean-up Inspection Campaign," now being carried on by the office of state apiary inspection, is making appreciable progress. The upper peninsula is now free from disease. Several counties in the northern part of the lower peninsula are quarantined, and after rigid inspection are practically free from disease. Inspectors in several counties in the southern part of the state report from four to twenty townships free from disease. Surely Michigan beekeepers should take pride in the work which is being done to eradicate and control bee disease in Michigan.

Federal students taking courses in beekeeping at the Michigan Agricultural College, who purchased approximately 200 colonies of bees in the spring, have increased their colonies in some cases from 10 to 50. Many of these students now have apiaries started which will earn them considerable revenue next season. Furthermore, in the operation of these colonies through a complete season they have fixed in mind many details of manipulation which would have been lost without opportunity to practice them as instructed. Russell H. Kelty.

East Lansing, Mich.

* * *

In New York.—The yields of clover honey throughout the state have been very much spotted, although excessive rains in June were general. In the same county one beekeeper will report a 100% crop, whereas another will report 25%. Swarming was excessive in June and early July due to the heavy rains which kept the bees confined to the hive and thus created great congestion of the brood-nests. The comb honey crop is over; but beekeepers in some localities seem panicky about selling their crop and are offering it to the grocers, in some cases, two sections for a quarter. The comb honey crop throughout the United States is apparently light, and I believe that fancy white comb honey will sell for not less than $5.50 a case in the very near future.

Many beekeepers are introducing new queens at this time of year, and such a practice is of course to be commended. A great many, however, make the mistake of introducing these queens into a honey-bound and pollen-clogged brood-chamber, insurmountable barriers to the most willing queens. Brood room should be amply provided during early September, and all colonies that are not strong in young bees by the end of the month should be united with other colonies.

The prospects for the buckwheat crop are not especially good. The acreage is small, and much of the buckwheat planted has been damaged by the August storms. Only within the last few days has the weather been favorable for gathering nectar from this source. R. B. Willson.

Ithaca, N. Y.

* * *

In Arkansas.—Arkansas is to have its second annual state fair at Little Rock Oct. 9 to 15 inclusive. This is an opportunity for beekepers of this state to get before our people nature's sweets produced in Arkansas. Those who can do a bit toward making this exhibit a success should write at once to H. K. Thatcher, Extension Division, 310 Donagay Bldg., Little Rock, Ark., advising him what they can do, and at the same time give him the names of beekeepers whom they know.

Elba, Ark. J. V. Ormond.

NO 1
NO 2
NO 3
NO. 4
HONEY
AND
BUCKWHEAT
CAKES
NO 5

The hives of bees themselves make a most effective signboard for advertising honey.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Robbing a Means of Selection. I have, as a rule, seen robbing mentioned as a kind of inexplicable occurrence, or sad thievish trait in the character of the otherwise so virtuous bee, slightly hinting at the sad occurrence even in the animal world of the original sin. I admit that it is a very annoying thing, and under modern conditions even a very baneful thing, inasmuch as it is an effective means of spreading disease. But considered under natural (not domestic) conditions, it seems to me to be a most effective means of selection; the means by which the weaker strains were eliminated, and only the strong ones left to perpetuate the race.

St. Thomas, Virgin Islands. Axel Holst.

* * *

Wild Cucumber a Honey Plant. Near my home is a Missouri River bluff about three miles long and 150 feet high. It is no exaggeration to say that this bluff is completely covered with wild cucumber vines. They have choked out the underbrush, climbed the trees and covered hundreds of feet square with a thick carpet. This condition has prevailed only for two years, the vines formerly not being noticeable in any way.

It blooms for four or five weeks, and up until noon is alive with bees, wasps, flies and many other insects. It seems to yield large quantities of nectar, and the bees go wild over it. Last year four stands of my bees averaged 60 pounds from this source, there being practically nothing else for them to work on. The honey has an excellent flavor, better than clover to my mind, and is very thick, with a light amber color.

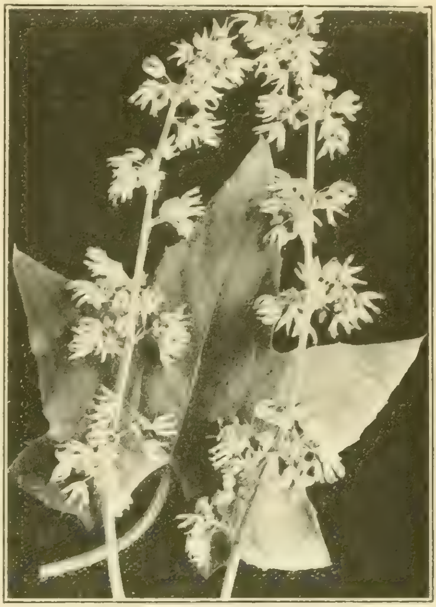
Last year one vine grew out of a small hotbed in my back yard and was allowed to mature. It completely covered a space 35 by 70 feet, went all over a large cherry tree, and I think would have entered the house if allowed. The main stalk of this plant was thicker than a man's wrist and had a taproot four feet long.

The early honey flow in this vicinity was a complete failure, none of my bees storing enough to winter them—to say nothing of surplus. All beekeepers I know are in the same boat, so the wild cucumber is a big help.

Incidentally, the wild cucumber last year choked out many acres of elderberry bushes, much to the chagrin of the home brewers.

Kansas City, Mo. C. J. Latham.

[Wild cucumber is usually identified as *Echinocystis lobata*, also called the wild balsam apple. It is thus determined by Pellett in his book on honey plants. There are, however, several other climbing vines, which belong to the gourd family or Cucurbitaceae, and are known as climbing cucumber vines, as the star cucumber (*Sicyos angulatus*) and creeping cucumber (*Melothria pendula*). They occur in many eastern states and extend westward to Kansas and Missouri. Specimens of the flowers and leaves are, therefore, very desirable for determination with certainty. Blue vine is also very abundant on the bottom lands of the Missouri River in the state of Missouri, especially in Chariton County. Assuming that wild cucumber is *Echinocystis lobata* it has been reported to yield a white honey in certain localities in the bottom lands of the Mississippi and Missouri Rivers. In the Beekeepers' Review, November, 1902, at Humboldt, in the southwest corner of Nebraska, "the garden of the state" it is described as on stream flats covering the ground completely and tree trunks, transforming the forest into a scene of surpassing beauty. "Each vine bears clusters of small white flowers, which yield honey abundantly until the vine is killed by frost." I have cultivated wild cucumber in my garden at Waldoboro, Maine, and enclose a photograph of the flower, natural size. It proved to be practically nectarless here, and was very rarely visited by bees. However, all the species of the gourd family are nectariferous, and it is very likely that under favorable conditions, in a climate where it flourished as a wild plant, it would yield nectar freely.—J. H. Lovell.]



Wild cucumber in bloom.

TALKS TO BEGINNERS

Geo. S. Demuth

In the North the bees complete the shaping of their affairs for winter during September or early in October. If nectar is available they now store more in the brood-chamber, sometimes crowding the brood-rearing space during the latter part of the month until but little brood is left. It is interesting to note that the honey is stored as far as possible from the entrance, thus placing it above and back of the brood. Finally, late in September or early in October there is left only a little sphere of brood in the lower front portion of the brood-chamber if the colony is well provisioned with honey for winter. Then the queen quits laying entirely or the bees refuse to care for the few eggs she does lay, and brood-rearing is suspended for the winter. This usually occurs about October 1 in the North and a little later in the South. When the last of the brood emerges there is left a spherical portion of the brood-chamber containing vacant cells. This is where the winter cluster is formed, if the interior of the hive becomes so cold that the bees must cluster away from the walls of the hive and the ends of the combs.

Noting the location of the winter cluster in October or November in such cases, some have concluded that the bees cluster near the entrance because they need ventilation; but, if they look later after the bees have consumed most of the honey in the front of the hive, they will note that the cluster has moved away from the entrance. The amount of stores a colony has, can thus be estimated by the position of the cluster.

Since the bees now arrange things in the hive for their safety during winter, the position of the combs should not be changed unless necessary. Combs can be taken out to examine the colony at any time desired, but they should be put back into the hive in the same order they were before. Ordinarily it is not necessary to take out any frames from the brood-chamber in September. If the colony had a young queen that was laying last month, we may be reasonably sure she is still all right. The amount of honey the colony has, can be estimated by lifting the hive and looking in at the top. Sometimes lifting up a single frame from the middle of the brood-chamber tells the beekeeper as much about the condition of the colony as a complete examination of every comb.

Honey Plants That Bloom in September.

September is also the time of fall flowers, and in some localities there may be a good honey flow some time during the month. In the buckwheat region the buckwheat honey flow, which begins in August, sometimes continues during the first week or ten days of September. In the far north where willow-herb is abundant, the honey flow from this excellent honey plant often continues into September. In portions of the northeastern states, especially the New England states, goldenrod often continues furnishing considerable surplus. In swampy places the swamp Spanish needle and other fall flowers come into bloom early in September, furnishing a rich amber honey sometimes in large quantities. In the Mississippi Valley, heartsease (sometimes called western smartweed) often continues to yield sufficient nectar to cause the bees to work in the supers well into the month of September. Later in the month and extending into October, the asters, if abundant, continue to tempt the bees to the fields even after the weather becomes too cold for their safety.

Much depends upon the locality whether the bees gather much or little during September. In some localities considerable surplus is stored, while in others the bees gather less than they consume. Sometimes during a light fall honey flow when the bees must spend so much time in searching for nectar, the colonies become greatly depleted in numbers, so fall honey flows are not always beneficial. However, brood-rearing is usually stimulated by the incoming nectar sufficiently to make up for this depletion.

Where the fall honey flow is heavy it may be necessary to extract the finished honey from the supers early this month to give the bees room. Instead of tiering up the supers as during the early honey flow, it is usually better to have but one extracting-super on each hive during the fall honey flow, for the cooler nights and the tendency of the bees to concentrate their work are not conducive to good work in several supers. For the same reasons, it is usually not advisable to produce comb honey during the fall honey flow.

Colonies Become Smaller as Autumn Approaches.

The beginner will probably be surprised to note the decreasing number of bees at this time. When compared with their great strength in June and July, the colonies now appear to be small. Regardless of their strength in midsummer there is now a tendency for the colonies to become uniform in strength, so that all colonies having good queens, plenty of food in August and September and sufficient room for the queen will be about the same size, which is their normal winter strength.

If nectar is available now, colonies having good queens may have brood in six or eight combs or the equivalent of four to six combs completely filled with brood. If nectar is not available but the colonies are well provisioned, having not less than the equivalent of three full combs of honey, there will be less brood, probably the equivalent of two combs completely filled. If the queen is old or the colony has only a few pounds of honey, the amount of brood will be considerably less. For the safety of the colony there should be at least the equivalent of two full combs of brood in each hive at this time. This brood is of course usually distributed in three to five combs.

Colonies that are prosperous and continue to rear brood to the extent of at least the equivalent of two well-filled combs this month should be in good condition for winter; but colonies that are weak, short of stores, have a poor queen or become queenless during the fall brood-rearing period (August and September) will be in poor condition for winter. The fate of the colonies during the next six months, therefore, depends largely upon conditions this month.

How to Unite Weak Colonies.

Any colony that is too weak to take care of the equivalent of at least two or three solid combs of brood the first of September, especially in the North, should be united with another weak colony to make up a colony strong enough for winter. To unite two weak colonies, remove the cover of one hive and spread a sheet of newspaper over the top, the paper having a few pin holes punched through it; then lift the other hive from the bottom and set the now bottomless hive directly on top of the newspaper, thus making a two-story hive, in which the two colonies are separated only by the sheet of newspaper. If the colonies to be united are some distance apart in the apiary, the uniting should be done in the evening after the bees quit flying, or early in the morning before they begin to work in the fields, so that all of the bees of the colony that is moved are in the hive at the time of moving. If there is a difference in the strength of the two colonies the weaker colony is the one that should be moved and placed on top of the stronger one. The bees in the two colonies thus united will gnaw away the paper, and unite without fighting.

If there is a choice between the queens, the inferior one should be hunted out and killed before uniting; but, if the queens are equally good, the job of disposing of one of the queens can be left to the bees. Later all of the brood can be put into one story, and the other either taken away or left for the bees to fill if more room is needed.

Colonies Should Have Plenty of Honey.

If any colonies are found to be short of stores early this month, causing brood-rearing to be reduced below the danger point, they should immediately be supplied with combs of honey taken from colonies that can spare them or they should be fed about 15 pounds of granulated sugar dissolved in 12 to 15 pints of water. Such thin syrup can be fed early in September, but it is not suitable for feeding late in the month or in October. Syrup for later feeding should be much thicker.

What To Do With Queenless Colonies.

It is already rather late to do much with queenless colonies in the North; but, if such colonies are not too weak and can be given a queen at once, they may still rear enough brood to enable them to pull through the winter. When this can not be done the queenless colony can be united with another colony by the newspaper method described above, placing the queenless colony on top of the other colony.

It is also rather late in the North to replace old, failing queens with young ones. This should have been done before the middle of August for best results, but if attended to at once the young queen will still have several weeks to lay before brood-rearing ceases. The old queen should not be removed until the new one arrives, for the break in brood-rearing incident to requeening should be made as short as possible. Colonies can be requeened, even after brood-rearing has ceased, in order to have young queens in the spring; but, of course, when young queens are introduced so late, they do not benefit the colony for winter.

Marketing the Surplus Honey.

Probably most beginners who have produced surplus honey have already sold all they do not care to keep for their own use. If not, it is well to remember that the next three months are the best selling months for honey. Those who have only a few colonies can sell more than they can produce to their neighbors or to the local groceries. People apparently like to purchase honey from a local beekeeper, and by putting the honey up in attractive packages, stamping the name on every section of fancy comb honey and putting a neat label on the packages of extracted honey, a local beekeeper can sell large quantities of honey. As a rule, it is not best to sell large packages of honey to consumers. The packages should be small enough to leave a taste for more. For this reason an ordinary quart fruit jar, which holds three pounds of extracted honey, is plenty large enough for a glass package, and the five-pound pail is a good size for tin. For small families the ten-pound pail is too large; for, strange as it may seem, some will buy a five-pound pail of honey at frequent intervals, while if they take a ten-pound pail they seem to tire of honey before it is all gone, and quit buying. Many good customers for honey have been lost because an ambitious salesman talked them into buying a sixty-pound can instead of a smaller package.

Beginners who have a talent for selling honey will find it profitable to purchase honey in the bulk from other beekeepers or from dealers, to supply their customers after their own crop has been sold. Those who sell honey locally should study carefully our market pages in establishing their prices, and should also read the special articles on marketing in this issue.

GLEANED BY ASKING

Geo. S. Demuth

QUESTION.—I am digging a basement under my summer cottage, which is located high and dry. The basement will be eight feet deep, 16 feet long and 16 feet wide. As there will be no occupant of the house during the winter the question arises whether this basement will be too cold for wintering bees where the temperature during January and February often reaches 40° below zero. Would it be well to put boards around the hives and pack them with six inches of leaves? R. Turnbull.

Minnesota.

Answer.—Such a basement would no doubt become too cold for good wintering in your climate, especially if much of the upper portion of the walls is exposed above ground. You may be able to winter the bees successfully in this cellar by packing as you describe, but it will be better to pack the cellar itself by banking up the outside with straw two feet or more above the top of the basement walls. It may also be necessary to put some kind of packing over the floors above to keep the temperature of the basement above 45°.

A better plan would be to dig the basement deeper into the ground, then put in a false ceiling about three feet below the surface of the ground, filling the space between this false ceiling and the floor above with packing material such as dry forest leaves, planer shavings or sawdust.

Bees Rear Queen in 11½ Days.

Question.—Why do all the books give 16 days as the time for the development of a queen when my bees reared a queen in 11½ days.

Virginia. Carrington Callaway.

Answer.—The development period as given in the books is computed from the time the egg was laid, while in the case you mention the queen was no doubt reared from a larva at least one day old. Since it is three days from the time the egg is laid until it hatches, this would make four to four and a half days to be added to the 11½ days in the case you mention, making the total period for development 15½ to 16 days.

Insufficient Stores Left After Extracting.

Question.—If a colony fills three extracting-supers and I take them all off, will it be necessary to feed this colony sugar syrup for winter? L. J. Heinzer.

California.

Answer.—If there is no later honey flow to supply stores for winter, it will be necessary either to feed such colonies for winter or to give them frames of honey. Often it is not safe to extract all the honey from the supers even when a later honey flow is assured, for there may not be enough honey left in the brood-chamber to enable the colonies to keep up brood-rearing until the later honey flow begins. Such close extracting no doubt puts more colonies of bees out of commission for the next season, every year, in this country than all the brood diseases combined. If all the beekeepers in the United States could in some way be induced to leave 40 to 50 pounds of honey in each hive at the close of the season for the bees, the total honey crop of the country the next season would no doubt be more than doubled. The successful beekeepers are those who supply their bees with an abundance of stores at the close of the season or who are located so favorably that nature supplies sufficient food for the bees after the honey has been extracted.

Wintering Two Queens in One Hive.

Question.—Is there any way of wintering two queens in one colony or in one hive?

Kansas. A. E. Zellner.

Answer.—Two or more queens can be wintered in the same hive but not very well in the same colony. The hive can be divided by a tight-fitting division-board and provided with a separate entrance for each division so that two or more nuclei can be wintered in one hive. Queen-breeders sometimes winter surplus queens in this way to fill early orders in the spring. It will be well to have these small colonies strong enough to cover at least three combs. A division-board can be inserted in the middle of the hive in the fall, dividing the brood and bees about equally on each side, and the queenless part supplied with a queen or a ripe queen-cell, thus making two colonies. Such colonies should winter well if supplied with sufficient stores, but will need more room early next spring.

When the bees rear a young queen to take the place of the old one, frequently they permit both the old and the young queens to work together for some time after the young queen begins to lay, but usually the old queen disappears after the honey flow, so it is not often that the two queens are wintered. It is possible under certain conditions even to have two or more young laying queens in one colony during the honey flow, but usually all but one disappear after the close of the honey flow.

Placing Combs Crosswise in the Hive.

Question.—If the bees build their combs crosswise in relation to the entrance in nature, why are hives built with the combs running lengthwise? John Valley.

Ohio.

Answer.—In nature, bees build their combs in various directions in relation to the entrance, no special rule being followed. It has been suggested that the hive will be warmer in winter if the entrance is at the side of the combs instead of in the usual position at the ends. In the older literature this was designated as the warm way of placing the combs, while placing them with the ends toward the entrance was called the cold way. In actual practice this probably does not make much difference in the way the bees winter. The hives are built with the entrance at the end of the combs in order that the floor of the hive can be tilted slightly forward to prevent water from running in. If the entrance were placed at the side, tilting the floor in this way would throw the combs out of plumb, making them difficult to handle.

Bees Fail to Work on Goldenrod.

Question.—Why is it that bees do not work on goldenrod in this locality? I read of beekeepers in other states obtaining honey from this source.
Tennessee. W. A. Daniel.

Answer.—Like other honey plants, goldenrod does not secrete nectar everywhere it grows. Soil and climatic conditions have much to do with nectar secretion, each plant having its own peculiar requirements for best results in the amount of nectar. Goldenrod is reported as a good yielder in the New England states and as far south along the Atlantic Coast as Virginia, but in some localities it yields but little if any nectar. Again, some seasons are unfavorable for nectar secretion even when the flowers are thrifty and abundant, while other seasons are so favorable that, even though the flowers are not so abundant, they furnish large quantities of nectar. Where a recognized honey plant fails to yield year after year, it is probably because either the soil or the temperature is not entirely suitable.

Fall Treatment for American Foul Brood.

Question.—What should I do with colonies that have American foul brood late in the season when there will not be much honey for the bees to gather from now on? W. B. Statt.
Illinois.

Answer.—If the colonies are badly infected so that not much of the brood matures, the best thing to do is to kill the bees with sulphur or gasoline and melt up the combs. If the colonies are but slightly infected, they can be treated, after brood-rearing has ceased in October, by shaking the bees into a clean hive containing combs of sealed honey. When this is done, the bees having no vacant cells in which to put any infected honey they may have in their honeysacs, they must consume it. This fall treatment usually results in a cure; but, if there are any vacant cells in the combs of honey, it is safer to shake the bees into an empty hive, leaving them about 24 hours before giving the combs of honey. To prevent swarming out in the meantime the hives can be carried into the cellar, or, if left outside, the queen should be caged to prevent absconding.

Moving Bees Short Distances.

Question.—When will be the best time to move bees from one slope of a hill to the other, a distance of about 100 yards? P. L. Conoway.
Indiana.

Answer.—It will be well to wait until February before moving the bees this short distance, for, if they are moved when they have frequent flights, many of them will return to the old location and become lost. By waiting until they have been confined to their hives for some time, fewer bees will return to their old location. If it is necessary to move the bees before winter you can do it by first moving them to another location several miles away, leaving them a week or two and then moving them back to the desired location. The bees having become accustomed to their surroundings in the distant location apparently forget their old surroundings, so that when they are brought back they can be located wherever desired. Of course, this plan works best when the bees can fly freely every day. If they were confined to their hives while at the distant location, the plan would not be successful.

Using Combs of Honey from Diseased Colonies.

Question.—In treating my colonies for American foul brood, I have several dozen frames containing honey but which have never had brood reared in them. Will these be safe to use again? If not, how can I treat them to render them safe?
Montana. A. J. Fowlerton.

Answer.—To give these combs of honey back to the bees after treatment would result in a recurrence of the disease in practically every case, especially if the colonies which stored this honey were badly diseased. It should be remembered that American foul brood can be transmitted largely through honey from diseased colonies.

There is no method known for treating combs of honey from diseased colonies to render them safe. The only way you can safely give this honey back to the bees is to boil it in a closed vessel for about 30 minutes, placing the combs in water, allowing about five pints of water for each comb of honey. This honey after boiling can be fed to the bees next spring, but should not be fed for winter stores.

Wintering in Two Stories.

Question.—My bees are now in two-story ten-frame hives, the supers being practically full of honey, but there is hardly any honey in the brood-chambers. Will they winter this way (of course, being fully packed later on) or should I place the brood-chamber above the super of honey or crowd the bees into a single brood-chamber with four or five frames of honey?
Ohio. Paul S. Nichols.

Answer.—The bees should winter well in the two stories with the honey above just as they arrange it themselves. Some beekeepers place the hive-body containing the honey below the brood-chamber for winter, which of course has the advantage that the bees then cluster in the warmest part of the hive, but there would be danger that the bees would use all the honey in the upper story during a spell of cold weather and starve because they could not go below for honey. As the honey is consumed in winter the cluster moves upward, the margin of the cluster enveloping some of the honey; so that, if the main supply of honey is placed below, the cluster would normally move away from it as stores are consumed. If the brood-chamber contains enough for winter, placing the chamber of honey below may work well in Ohio. Farther north, where the winters are more severe, it will be better to crowd the bees and honey into a single brood-chamber for winter.

JUST NEWS

Editors

THE Extension Service of Iowa State College has 100 demonstration apiaries scattered throughout the state. This season a campaign for "Better Queens" was put on in these demonstration apiaries. It is estimated that about 2,000 queens have been ordered this season by the Iowa State Beekeepers' Association and introduced by the extension specialists. This work is being done by Newman I. Lyle under the direction of Professor Paddock.

* * *

The summer meeting of the South Dakota State Beekeepers' Association will be held at Scotland, South Dakota, August 28. This is a comparatively new association in the midst of the great sweet clover belt where large yields are secured year after year.

* * *

Plans are being made for an extensive honey exhibit at the Mid-West Horticultural Exposition to be held at Council Bluffs, Iowa, November 13 to 18. Cash prizes are offered to the extent of nearly $1,000, which will no doubt attract exhibitors from a large part of the country.

* * *

George R. Vansell has been appointed by the University of California for the work in beekeeping at the University Farm, Davis, Cal.

* * *

The Michigan Beekeepers' Association has just published a booklet containing information for its members. This booklet contains the name and address of each member of this association.

* * *

A conference of the officials of the American Honey Producers' League was held at Green Bay, Wis., during the week of the Beekeepers' Chautauqua, August 7 to 11. Prof. H. F. Wilson, Madison, Wis., the newly elected president, Colin P. Campbell, Grand Rapids, Mich., the newly elected vice-president, and E. S. Miller, Valparaiso, Ind., member of the executive committee, were present.

* * *

The Ohio State Beekeepers' Association, together with the Tri-County Beekeepers' Association of western Ohio, will hold a field meet at Delphos, Ohio, September 13. This meeting is to be held in co-operation with the Tri-County fair, and arrangements have been made for a large honey exhibit. An extensive program has been arranged for the day. An advertisement for this meeting appears on page 609 of this issue.

* * *

It is not often that college students can retain laboratory equipment which they used in college, but Professor Kelty, Instructor in Beekeeping at the Michigan Agricultural College, has made arrangements whereby the students purchase their own equipment and take it with them to establish themselves in beekeeping. Professor Kelty says that students take greater interest in their work because they own their own equipment.

* * *

The Ontario Beekeepers' Association will hold its 42nd annual convention at Toronto on December 6, 7 and 8. The directors have arranged for several special features that will no doubt attract a large attendance. There is to be a debate on the merits of the 10-frame Langstroth hive as compared with larger hives. Prominent beekeepers who have used both kinds of hives will debate this interesting and important question. An important business session is scheduled for the discussion of the handling of supplies and the sale of honey. Prizes are to be given in a frame-assembling competition, which will be open to any member.

* * *

The University of Idaho has issued Circular No. 22, "Sweet Clover," by R. K. Bonnett and H. W. Hulbert, giving cultural methods, feeding value and value as a soil improver, that is of interest to beekeepers. It is published by the University of Idaho, Moscow, Idaho.

* * *

The beekeepers' Chautauqua at Green Bay, Wis., Aug. 7-11, was well attended by wide-awake, enthusiastic beekeepers from all parts of the state. Prof. Wilson is already making plans for a great beekeepers' Chautauqua to be held at the University at Madison next year, at which time beekeepers from other states will be invited to attend. This will afford an opportunity to visit the Miller Memorial Library; and a pilgrimage to Marengo, Ill., is to be made at the close of the meeting to place a memorial plate in the church which Dr. C. C. Miller attended, the memorial plate being a tribute from the beekeepers of the entire beekeeping world.

* * *

The extension service of several of the states is mailing out to the beekeepers of the state form-letters on advice to beekeepers. The Michigan Agricultural College, East Lansing, Mich., has been keeping the beekeepers of Michigan posted on timely topics in this way for several years. The Massachusetts Agricultural College issued "Timely Topics for Beekeepers, No. 1" in July. The Massachusetts beekeepers who wish to receive this form-letter may no doubt do so by writing to Prof. N. E. Phillips, Massachusetts Agricultural College, Amherst, Mass.

OUR HOMES
A. I. ROOT

Again, the devil taketh him up into an exceeding high mountain and sheweth him all the kingdoms of the world and the glory of them, and saith unto him. All these will I give thee if thou wilt fall down and worship me.—Matt. 4:8, 9.

And the serpent said unto the woman, Ye shall not surely die.—Gen. 3:4.

And no marvel; for Satan himself is transformed into an angel of light.—II. Cor. 11:14.

My grace is sufficient for thee.—II. Cor. 12:9.

Simon, Simon, behold, Satan hath desired to have you, that he may sift you as wheat: but I have prayed for thee, that thy faith fail not.—Luke 22:31, 32.

At the ninth hour Jesus cried with a loud voice, My God, my God, why hast thou forsaken me?—Mark 15:34.

LAST winter, while our good pastor was leading the Bible class in our Presbyterian church, he startled me by saying something like this:

"My good friends, whenever you get to living in close touch and communion with the Holy Spirit for a considerable time you may be sure that Satan will put in his best endeavors to get you off the track. It seems to me that, after I have been living close to God for even *one week*, I soon hear from the prince of darkness in some way or other."

The above startled me because I had been having a similar experience. I have told you before that Mrs. Root's sudden death had driven me to God's holy word, and that I had searched for the promises in a way I never did before in all my Christian life. Well, this keeping in close touch with the Holy Spirit brought its reward. I have already told you about having glimpses of the promise, "joy unspeakable and full of glory," such as I had never known before.* Just before our good pastor mentioned the above I had been for several days—yes, for a week or two—troubled because the Holy Spirit seemed for a time to have deserted me, or at least partly so. I had been holding fast to David's little prayer—"Let the words of my mouth and the meditation of my heart be acceptable in thy sight, O Lord, my strength and my redeemer," and, as I have told you before, I managed pretty well about my words and acts; but in some way the "meditation of my heart" had been going astray. Old temptations of years ago, that I had almost forgotten all about, came trooping back. I think it was Satan who kept suggesting that I had *not* been "born again," and that it was only a notion of mine, that the dear Lord had "lifted me" from the "sinking sand," as we have it in that beautiful hymn, and that I was in real truth pretty much the same "old sinner" that I had been 40 or 50 years ago. I had to admit that this was, at least, partly true. I was a sinner, and, to a certain extent, I *have been* a sinner every day of my life; but Christ Jesus (thank the Lord) came from his home in heaven to this earth to *save* sinners—just such sinners as I am and probably shall be to the day of my death.

Some of you may ask, "What about your emergency prayer—'Lord, help'?" Well, for some unknown reason that little prayer seemed to have lost its efficacy. Again and again I climbed above suggestions and temptations, but back they came trooping again. Before I knew it Satan seemed to be getting in his work. Down in my Florida home a great part of my time has been spent out in the open air alone by myself, where I can pray out loud—yes, and sing snatches of those precious hymns of promise. At one such time I stopped and said to myself something like this:

"Suppose that A. I. Root, who has been giving you these Home papers and quoting God's precious promises (and, I hope, leading many souls out of darkness and into the light)—suppose this old friend of yours, after he is 80 years old, should be tempted to do or say something that would upset the good work of nearly half a century?"

Well, one day when I was out riding in my electric auto, all alone on the road where I could pray out loud, I almost demanded of the Holy Spirit, or perhaps I might say of the dear Savior, why it was that I was thus pestered and followed up by Satan and his emissaries. What do you suppose happened? A quick response came, seeming almost like a distinct voice, "My grace is sufficient for thee." It gave me such cheer and encouragement that I almost shouted out loud. The dear Lord had been leading me through this experience in order that I might better *understand* how poor humanity, men and women, are tempted and led astray.

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* In Gleanings for September, 1921, page 580. I told you about starting that Sunday school in that little town cursed with saloons and breweries. The work prospered until the little schoolhouse would hardly hold the boys and girls who came from far and near. About this time Satan began to "sit up and take notice." I can imagine him saying to himself, "Whew! This thing must not be allowed to go on." And then he suggested to the manager of the brewery to offer the men and boys free beer during the whole hour the school was in session; and he succeeded. or did for at least one Sunday, in getting almost every man and boy away from the Sunday school This incident illustrates the great truth our pastor spoke of, that when any work for the Lord Jesus Christ gets to making progress you may be sure the devil will take notice and be on hand and do his very best to block the way.

And another thing, I went to searching my Bible, and found the words were spoken by the veteran soldier of the cross, Paul. He had his "thorn in the flesh," and God had honored me by giving *me, too*, a thorn in the flesh to keep me humble and to keep me on my guard. If you will read over the precious Psalms of David you will see how often David was tempted, and that these temptations are what brought out his wonderful prayers for help. And even the dear Savior himself when on the cross, when his multiplied sufferings were so great, gave voice to the words, "My God, my God, why hast thou forsaken me?"

In the fourth chapter of Matthew, after the temptation of Jesus in the wilderness, when Satan had shown him the kingdoms of the world he said, "All these things will I give thee if thou wilt fall down and worship me." The dear Savior consented to listen to him, but he finally replied, "Thou shalt worship the Lord thy God, and him only shalt thou serve." Well, during those times of conflict with Satan, I shall have to confess that several times I listened, with a sort of curiosity, to know (and see) what he really *had* to offer; and I shall have to confess that I have greater charity than I ever had before for those who deliberately decide to give up all hopes of heaven for the gilded suggestions of what Satan has to offer. He told Eve in the garden of Eden that, even if she *did* eat of the forbidden fruit, she would not *surely* die; and so he has been telling poor, infirm humanity ever since the world began. Let me digress a little right here.

I have been reading the dailies pretty carefully, or at least running them over hastily, to see that nothing escaped my notice, for the most of my life. Of late I scan the pages to see what progress the Anti-Saloon League is making in law enforcement in regard to prohibition. I have also been making a study of crime and criminals. In Bible times we are told of men—yes, and I am sorry to say women, too—who were "possessed of devils"; and I fear that even Christians have been inclined to *jest* about "demoniacal possession." I have wondered of late why some great man or woman, some minister of the gospel, or other friend of humanity, did not suggest or had *not* suggested that we are having demoniacal possession, *now*. You all know, I suppose, that there seems to be a growing fashion for some man to shoot his wife or sweetheart, and then turn the weapon on himself. Who but the devil would suggest to any man the killing of his wife before he kills himself? Yes, in some cases the "demoniac" kills all his children, or as many as he can, and then kills himself; and lovers shoot their sweethearts. I had been hoping that, with prohibition, this kind of work would let up. Perhaps it has let up somewhat, but a good many times a drunken man shoots his wife before he shoots himself, and a rejected suiter frequently shoots the girl he says he loves. Sometimes he gives as a reason that he can not bear to see her married to anybody else. If there is such a thing as self or sefishness *boiled down*, this would seem to be the culmination of it. By the way, Satan's work is *always* selfish. He cares for nothing but to destroy and ruin everything that is good and pure on this earth.

There is still another form of demoniacal possession. A maried woman—yes, perhaps the mother of several children—deliberately runs away with some man who is a devil in human form. Sometimes the woman later comes to her senses and begs piteously to have the poor, outraged husband receive her back. The children cry piteously for the dear mama who has been gone perhaps for weeks, or even months, and the mother's heart *yearns* "piteously" to be permitted to go back after she has shaken off her infatuation and freed herself from Satan's clutches. Shall the poor sin-scarred and crippled mother be permitted to go back to the wronged husband and to her children? I may say that I have been consulted in just such a matter, and decided that, if the poor woman is truly penitent, by all means let her come back.*

Just one more case of men who are possessed of devils. A poor man in the city of Cleveland came over to this country and worked for *six years* to get money enough to go back and get his wife and children. Before he started on his trip back he was so overjoyed with the thought of meeting his loved ones that he confided the matter to some of his friends. He drew his money out of the bank, and was ready for the trip. Two demons in human form waylaid him and demanded his money. He had waited so long, and had planned so carefully, that he was reluctant about giving it up. They pounded him almost to a jelly, and left him crippled for life, and took every cent of his hard earnings. I leave it to you to say if those two, devil-possessed, were not devils in human form. In olden times the only remedy we know of was "the Lamb of God who taketh away the sin of the world," who, by word of mouth, banished the devils wherever they had taken possession either of man or woman; and I am afraid that the only remedy clear up to this year of 1922 is the spreading of the gospel, which is equal to the task of banishing devils from the face of *the whole earth*.

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* Years ago, when I was learning shorthand by myself from a book, exercises were given to test the pupil's ability to read shorthand with vowels omitted. No answer was given in the book to these exercises. The pupil was supposed to be able to work them out by himself. I had mastered them all but one, and on that one I worked not only days but for a week or more. When I got it, it was so impressed on my memory that I shall never forget it. It read like this:

Think gently of the erring;
  You may not know the power
With which the dark temptation came
  In some unguarded hour.

In closing let me urge upon you the importance of going to your Bible whenever you are worried or troubled, or undecided as to what is the proper thing for the follower of the Lord Jesus Christ to do. And you want a good reference Bible. When you find some passage that seems to hit the point in question, by means of the references hunt out everything in regard to the matter. Again and again have I almost shouted to find that God's holy word made it so very plain as to what course a Christian ought to pursue. It has been verily a "lamp to my feet and a light unto my path." And one more thing: Before you can expect the good Lord to answer your prayers, get rid of anything that God's holy word condemns. Sometimes in going over the ten commandments we shall find that some one of them hits the spot to a dot. And remember this: "If I regard iniquity in my heart the Lord will not hear me."

Portland Cement—Where Does it Come From? Also Something about Alpena, Michigan.

A few days ago Huber and I were called to Alpena, Mich., to attend a beekeepers' convention; but just *now* I am not going to talk about bees. When I first reached the city I was impressed with the lavish way in which the good people of that northern locality were using *cement*, not only for broad walks clear away out in the country, but for beautiful paved roads broad enough to prevent collision, and just where good hard roads were so much needed in the sandy regions of northern Michigan. By the way, this beautiful city is built almost entirely of fireproof structures, either cement or stone; and I do not think I ever saw so many huge plate-glass windows (with beautiful displays of merchandise) in any other city of its size or even twice the size of Alpena.

After the convention the beekeepers were carried in automobiles over the city and into the surrounding country, and I am now going to tell you of a sight that took a mighty hold on me. Alpena has one of the largest works for making Portland cement that are to be found in the United States, and maybe in the world. The automobiles rounded up by the side of what we might call an immense stone quarry. This quarry was, perhaps, a quarter of a mile across. The stone that makes the cement seems to be a sort of shale. It had been scooped out until it is now like a great wooden bowl; and down somewhere near the lowest part was a big shovel operated by steam; but instead of its being a real shovel it was a sort of scoop with sharp-tined blades or forks. This machine was taking up huge forkfuls of the broken shale and dumping it into little wooden cars. Now, there are a dozen or more of these little cars, all moving on railroad tracks that circle about the quarry in different directions, *finally* coming to the surface and running up an incline so steep, it seemed to me like going upstairs. As fast as each little car was loaded it started off all alone by itself, circled about, gradually reaching the surface, then ran up the incline, dumped its load into a big freight car, and then went back empty after another load. The astonishing thing about this whole industry was that there was not a man in sight; and there was no evidence of any boss or any human being anywhere unless it was some one in that covered cab to operate the big steam shovel. These little rough-looking wooden cars went to and fro doing their work just as if they had intelligence. When a loaded car running up the incline saw an empty car coming toward it—or at least it looked to me as if it actually *saw* the car coming down—it stopped a minute until the empty one coming switched off on a side track; then after it got by, the empty one backed up and proceeded on its way, dodging other cars in a like manner so there was no collision, no dispute about the right of way, and no hitch in the work anywhere. It looked to me like a well-organized hive of bees. Of course I suppose there must have been somebody up near where the cars dumped, who kept an eye on things, and "pressed the button" in order to have everything move on just right. A friend near me suggested there was not even a man to "collect the fare and take up the tickets." I said at once, "Why can not our coal mines be worked on that plan and thus get our coal without any striking, as there is nobody to strike?" Somebody suggested that the operator on the tower might strike; but then, dear friends, we should have only one man to deal with instead of a *million* or more. Pretty soon I asked, "Why can we not in this way run our railways, trolley lines, and vessels on the great ocean, and *finally*, our *flying-machines*?"

Just while I was considering the matter today (Aug. 4), a circular was put into my hand from a great radio factory in Kansas City, Mo., from which I make the following extract:

"Radio transmits music through the air. It has guided warships without a soul on board through countless maneuvers at sea. It has brought pilotless airplanes from flying-fields safely through the clouds to other landings. It has guided driverless automobiles through crowded traffic."

While mentioning the above to a friend he said there is a coal mine somewhere in the South so near the surface that all they have to do is to scratch off a little top soil; and he said there is enough of it to keep doing exactly as these good people dig the rock for making cement.

"How are these little cars moved?" you may ask. Well, somebody said it is done by electricity, and that these tracks have a third rail to carry the current. Perhaps some friend who sees this in the region of

Alpena may explain the matter. When I first caught sight of this quarry I asked why it did not fill up with rain water, for there seemed to be no chance for an outlet. I was told that the loose rock or shale is so porous that it will not hold water. As fast as the rain comes down it goes out somewhere down through the bottom.

Now, what I have told you above suggests to me that electricity may possibly open up, or help to open up, a way to avoid strikes and disagreements between capital and labor. Perhaps the farmer may be enabled to do his work, or at least some of it, without the jangling and quarreling and selfishness that are just now, while I write, threatening to block the way of peace and good will both on land and sea.

Special Notices by A. I. Root

''Merrybanks and His Neighbor.''

The letter below explains itself:

''Dear Friend in Christ:

''Some years ago we purchased from you a little book entitled, ''Merrybanks and His Neighbor.'' Our copy has been worn out by constant use and lending it to neighbors' boys. I would like to know if you still have the book on sale, and the present-day price of it. Enclosed find stamped envelop for reply.

''Wishing you continued years of Christian joy in God's Name, I am

''Yours sincerely,
''J. M. Willoughby.

''363 S. Main St., Elmira, N. Y.''

I find we have quite a number of these books in stock, and I do not think they have been advertised or offered for sale for several years—perhaps through some oversight. It is a little book of 210 pages in regard to bee culture, poultry, gardening, etc., by your old friend, A. I. Root. The old-time price of the book was 25 cents and 3 cents additional for postage. While they last, any of our readers may have one for 15 cents prepaid; and I hope that, when you get one, you will lend it to the boys in your neighborhood in the way our good friend who writes the above letter has been doing. It may be the means of sowing good seed that will bear fruit of still more importance than bees, chickens, gardens, or anything else.

Nitrate of Lime for Sweet Clover.

By the way, during the winter a firm in New York City advertised a free package of Norwegian nitrate of lime. They said the nitrogen was taken from the air over in Norway, and the electricity used for the purpose was produced by means of windmills and waterfalls. A generous sample by mail was sent free of charge, and it seemed to hit the Hubam clover just right. A teacupful of it was worked in the soil with some Hubam that was about a foot high. It turned it to a rich dark green and sent it away up above the rest. A big wind, however, blew it down flat; but, not at all discouraged, the tips turned and started up again, and soon got up a foot or over above the other. I afterward purchased a barrel of about 200 pounds for $5.00, and this I sprinkled over my potato ground where I had planted Velvet beans. Our good friend Henry Ford is planning to get nitrogen from the great waterfalls at Muscle Shoals, Alabama. The Norwegian nitrate of lime acts very much like the nitrate of soda already on the market; but my impression at present is that it is a little more effective, and perhaps a little cheaper.

Poultry and the ''Chicken Business.''

My good friends, I hardly need tell you that I have been more or less in touch with chickens for, I might say, 80 years; and just now in the present year of 1922 we have a new poultry book by Prof. Richardson, of the College of Agriculture New Hampshire. The book has 152 pages, and discusses in an up-to-date manner almost everything concerning the poultry business. Now, to do the above, and confine itself to 152 pages of good-sized type, of course each department must be pretty well boiled down, and this is what I like about the work. As an illustration, the matter of electric lighting in order to get the eggs when they bring a big price is gone over briefly, and I quite agree with the editor in saying that where chickens are kept by the hundreds and thousands the owner had better have one of the up-to-date little electric light plants. This would not only furnish the light but pump the water, grind feed and do a lot of things. I do not know but an electric windmill might come in play nicely.

In regard to that bugbear, white diarrhea with day-old chicks, the author suggests that prevention is better than cure, and everything else seems to be managed in an up-to-date way. The matter of culling to get out the ''drones'' is also very nicely handled. Price $1.50. Address Harper & Brothers, New York.

''Kind Words.''

My dear Mr. Root:

I can call you a dear old friend; but, only because I never saw you personally, having known you only through correspondence for over 40 years, I content myself simply with the greeting, ''My dear Mr. Root.''

My Gleanings lapsed last fall, after a subscription for 40 years, and I failed to renew until last April. Now in the present number (for June I mean) I have my first knowledge of Mrs. Root's decease.

Although it seems to come at a late date, I trust you will feel that my sympathies are none the less sincere, and, indeed, most heartfelt. Many references have you made to her in your articles in Gleanings, and these, added to our knowledge of the kind of sons and daughters you mutually raised in the God-fearing way, make it certain to all of us familiar with her characteristics through your writings in the Home department of Gleanings that she was a splendidly good, consecrated woman who must have helped to inspire much that you have often tenderly endeavored to put into words, to do people good.

My wife was touched by your references to her in this July Gleanings; and, turning to me, said:

''Poor Mr. Root! I feel very sorry for him, for he must, after all the experiences of that long life together, feel lonely, though I think not sad, for he thinks and speaks as a Christian should about temporal partings and eternal reunions. His article is beautiful, and I hope you can say as much for me if I am taken first.''

And I told her I could.

Dear Mr. Root, you have some things to be grateful for. First, that the good and caring God has spared you both to a good old age together in a happy and useful life. Second, she was spared long and painful illness, and you a long anxiety and ministry because of protracted suffering on her part. Third, she having been a devoted Christian, you are now absolutely certain of her salvation, and happiness among the heavenly hosts, and she certainly awaits your coming into the great number in glory. Fourth, you now have one more of your very own, the veriest one to you on earth, to represent you and yours in that heavenly land. There is verity in all these. Be comforted in the surety that so many bear you company in the solace of them. And try to think how many friends you both have had, and how so many of them yet living are sympathizing with you and bearing you and yours on their hearts.

That you may have many wonderful comforts that the rest of us naturally can not share, and be kept in mysterious but sure daily peace, with a firm hold upon all eternal verities, and still live in faithful loyalty to your beloved, and to her and your God and Savior, is my prayer.

Yours most sincerely. T. Chalmers Potter
146 E. Ashland St., Doylestown, Pa., July 13, 1922.

Classified Advertisements

Notices will be inserted in these classified columns for 50c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column, or we will not be responsible for errors. For special conditions on bee and queen advertising, please write us. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

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HONEY AND WAX FOR SALE.

FOR SALE—White comb honey, mostly clover, in carriers. I. J. Stringham, Glen Cove, N. Y.

FOR SALE—White clover honey in 60-lb. cans—none finer. J. F. Moore, Tiffin, Ohio.

FOR SALE—White sweet clover in cases, two 60-lb. cans, 10c per lb., f. o. b. Joe C. Weaver, Cochrane, Ala.

FOR SALE—25 tons fine extracted white clover honey at 12c. Comb honey prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

FOR SALE—Clover honey, new crop, new cans. 1 60-lb. can, $8.10; 2 60-lb. cans, $15.60. Granulated. ½c pound less. John J. Lewis, Lyons, N. Y.

FOR SALE—White, amber and buckwheat honey in new 60-lb. cans and 5 and 10 lb. pails. H. B. Gable, Romulus, R. D. No. 2, N. Y.

FOR SALE—White, amber and buckwheat honey, in 60-lb. cans and 5 and 10 lb. pails. Write for prices. E. L. Lane, Trumansburg, N. Y.

WRITE for prices on a case or carload of new clover honey. G. E. Engle, 1227 23rd St., Sioux City, Iowa.

FOR SALE—New white clover honey of the finest quality in 60-lb. cans and 5-lb. pails. Sample, 20c. A. S. Tedman, Weston, Mich.

FOR SALE—Choice clover extracted honey, packed in new 60-lb. cans. Write for prices, stating quantity desired. J. D. Beals, Oto, Iowa.

FOR SALE—12,000 lbs. of choice white clover honey, well ripened, put up in new 5 and 10 lb. pails. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—Finest quality white clover extracted honey in new 60-lb. cans, 2 cans in case, $14.40 for case f. o. b. Sample, 10c. Alice Burrows, Oran, N. Y.

FOR SALE—Very best clover-basswood honey. Produced in new combs. Packed in new containers. 60-lb. cans and 5-lb. pails. Sample, 20c. Write for prices. A. C. Ames, Weston, Ohio.

FOR SALE—Extracted white clover honey, 1922 crop, new tins, two 60-lb. cans to case, at $15.00 per case. J. G. Burtis, Marietta, N. Y.

FOR SALE—Choice white clover honey in new 60-lb. cans, 120 lbs. net, $15.00. Sample, 20 cents. Edw. A. Winkler, R. D. No. 1, Joliet, Ill.

FOR SALE—Choice new clover extracted honey put up in new 60-lb. cans. Write for prices, stating quantity desired. W. M. Peacock, Mapleton, Iowa.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gal. barrels. Samples and price on request. A. I. Root Co., 23 Leonard St., New York City.

FOR SALE—White clover honey in 60-lb. cans and 5-lb. pails, this year's crop, none better. Write for prices. Sample, 10c. F. W. Summerfield, Waterville, Ohio.

FOR SALE—50,000 lbs. extra fancy white clover honey. Price, one 60-lb. can, 16c a lb.; two 60-lb. cans, 15c a lb. Sample bottle by mail, 10c. J. M. Gingerich, Kalona, Iowa.

HONEY FOR SALE—In 60-lb. tins, water-white orange, 15c; white sage, 14c; extra L. A. sage, 12c; buckwheat, 10c, etc. Hoffman & Hauck, Woodhaven, N. Y.

FOR SALE—Clover honey in new 60-lb. cans, 2 cans to the case, at 12c per lb. Buckwheat honey in barrels, 150 lbs. each, at 10c per lb. Sample, 10c. R. V. Cox, Sloansville, N. Y.

MY new crop of comb and extracted honey, unexcelled for quality. Prompt service and satisfaction guaranteed. Sample, 15c, to apply on first order. O. W. Bedell, Earlville, N. Y.

RASPBERRY HONEY—In 60-lb. cans, 2 in a case for $14.40; one in a case, $7.50. Sample by mail, 20c, which may be applied on order for honey. Elmer Hutchinson & Son, Lake City, Mich.

FOR SALE—Clover and amber honey in new 60-lb. cans, 2 in a case, new crop; also 9 cases amber honey 1921 crop, sample and prices on request. H. A. Meyer, West Point, R. D. No. 3, Nebr.

FOR SALE—No. 1 white comb honey, $6 per case of 24 sections, six or eight cases to carrier, light and dark amber extracted in 60-lb. cans, 10c per lb.; amber baker's honey in 50-gal. barrels, 8c per lb. H. G. Quirin, Bellevue, Ohio.

FOR SALE—A1 diamond clear sweet clover extracted honey, in 60-lb. cans, 10½c per lb.; in 5 and 10 lb. friction-top pails, 15c per lb. This honey is guaranteed to be equal to any honey in U. S. in body, color and flavor. Virgil Weaver, Box 311, Moville, Iowa.

CLA-FO-NY Quality (liquid or crystal) honey, the result of 18 years' experience in honey production, is thoroly ripened by the bees, free from wax or pollen. Prices: clover, case of 2 60-lb. cans, $16; case of 15 5-lb. pails, $12.75. Buckwheat, 2 60's, $10.80; 15 5's, $9.75. Sample, 20c. In 5-case lots, 5% off. Buckwheat suitable for baking, 2 60's to case, $6. Clarence Foote, Delanson, N. Y.

FOR SALE—We can supply honey to beekeepers or other roadside sellers who may need to buy beyond their own supply, packed as follows: 2½-lb. friction top tin cans, 2 dozen in case; 5-lb. friction top tin cans, 1 dozen in case; 10-lb. friction top tin cans, ½ doz. in case; 60-lb. square cans, 1 to case; 60-lb. square cans, 2 to case. We have the following kinds of honey: Standard white, alfalfa, sweet clover, California sage, California orange, light amber, amber. Write for prices, The A. I. Root Co., Medina, Ohio.

OUR 1922 crop extracted honey is a very fancy grade, water white clover, which was left on the hives until thoroughly cured by the bees before extracting, making it very heavy bodied. This thick, rich honey is all packed in new 60-lb. cans, two to the case. Of course, we have to ask a little more for honey of this quality than ordinary honey. When in need of a good article, send a dime for a sample, and address your inquiry to D. R. Townsend, Northstar, Mich.

FOR SALE—Our 1922 crop of white clover extracted honey, put up in new 60-lb. cans and cases. Stored by the bees in nice new white combs, above excluders. The entire crop left upon the hives until some time after the close of the clover flow. By buying our honey you get our 47 years' experience in the production of honey. You may be able to buy cheaper honey, but what about quality? We are offering our new crop clover extracted honey as long as it lasts at the following prices: One to five cases at 14c per pound, 5 cases or more, 13c per pound, on track here at Northstar. Address, with remittance, E. D. Townsend & Sons, Northstar, Michigan.

HONEY AND WAX WANTED.

WANTED—Honey, section, bulk comb and extracted. Elton Warner, Asheville, N. C.

WANTED—Good table honey. Send sample and tell me your price. W. W. Crim, Pekin, Ind.

WANTED—Bulk comb and section honey. Correspondence solicited. J. E. Harris, Morristown, Tenn.

WANTED—Honey in ton lots, comb and extracted of all kinds. Joe Mlinarits, 8927 Keller St., Detroit, Mich.

BEESWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED—Comb and extracted honey, carload and less. All kinds of honey and beeswax for sale. Walter C. Morris, 105 Hudson St., New York.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

WANTED—Beeswax. We are paying 1c and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address so we can identify it immediately upon arrival, and make prompt remittance. The A. I. Root Co., Medina, Ohio.

FOR SALE.

HONEY LABELS—New design. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE—Power circular rip and crosscut saw; 4 saws, $35.00. Clarence Foote, Delanson, N. Y.

FOR SALE—A new two-frame reversible No. 17 extractor. Write for price. H. Tebbe, Dow City, Iowa.

WORTH $$$ to you. Make your own frames. Save one-half. Non-sag thin top-bar. New feature. Sample, 10c. D. S. Hall, Marshfield, Vt.

FOR SALE—Good second-hand 60-lb. cans, two cans to case, boxed, at 60c per case, f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co. Cincinnati, Ohio.

HONEY cans and pails; new sixties, 50 cases at 91c per case two cans. The Stover Apiaries, Mayhew, Miss.

FOR SALE—Five Townsend uncapping tanks. Price, complete, $27.50 each. The A. I. Root Co., Medina, Ohio.

FOR SALE—"SUPERIOR" FOUNDATION, "quality unexcelled." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

PORTER BEE-ESCAPES save honey, time and money. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

SEND for our bargain list of new bee supplies, hives, frames, bottoms, covers, sections, shipping cases, almost everything you want. Some at 50% discount. The Stover Apiaries, Mayhew, Miss.

FOR SALE—210 hives of bees, about 600 supers, ton truck, extractor, everything for running for extracted and comb honey, $900 worth extra new material, price $3500. Death of husband cause for selling. For full particulars, write Mrs. Viola C. McAlpine, Busy Bee Farm, Boliger, Ala.

FOR SALE—3-horse steam boiler, $40.00. 4-horse steam engine, $45.00; galvanized round tank, 7 barrels, $7.00; 800-lb. round tin honey tank, large faucet, $7.00; cider mill and press, $7.00; new pump jack, $6.00; Williams pump, $6.00; double-acting force pump, solid brass cylinders, $12.00. J. W. Utter, Amity, Orange Co., N. Y.

WANTS AND EXCHANGE.

WANTED—A good two-frame honey extractor. P. B. Brown, Grantsburg, Wis.

WANTED—Maple sugar. Quote price and state how put up. Andrew M. Seibert, Intervilla, Pa.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

OLIVER typewriter, $65.00. Will exchange for honey extractor or eight-frame beehives for equal value. W. H. Ruel, 3024 Lycastle Ave., Detroit, Mich.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa. Council Bluffs, Iowa.

WANTED—White clover extracted honey in exchange for 100 new 10-frame full-depth supers with L. frames, nailed, but not painted. Lewis goods. Best offer by September 10 takes. John C. Bull, Valparaiso, Ind.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

BEESWAX WANTED—We need large quantities of beeswax and are paying good prices now. Ship to us at Hamilton, Ill., or Keokuk, Iowa, or drop us a card and we will quote f. o. b. here or f. o. b. your own station, as you may desire. Dadant & Sons, Hamilton, Ill.

OLD COMBS WANTED—Our steam waxpresses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1922 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Ill.

EXCHANGE—A fine 12-gauge Stevens repeater shotgun for A1 coon hound with trial. Fred Fisher, 3 Elmendorf St., Albany, N. Y.

WANTED—The New York Agricultural Experiment Station desires to purchase the following numbers of Gleanings in Bee Culture to complete its files: Vol. 23 (1895), Nos. 1 to 4, incl.; Vol. 33 (1905), index; Vol. 35 (1907), No. 8; Vol. 36 (1908), No. 7 and index; Vol. 44 (1916), No. 12; Vol. 46 (1918), No. 5; Vol. 49 (1921), No. 3. Address all communications to the Librarian, New York Agricultural Experiment Station, Geneva, N. Y.

BEES AND QUEENS.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

BEES for sale, honey and contents. J. W. Elliott, R. D. No. 6, Shelby, Ohio.

WHEN it's GOLDEN, it's PHELPS. C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

REQUEEN with SIMMONS' QUEENS. Prices reduced. Fairmount Apiary, Livingston, N. Y.

SPECIAL prices on queens. See my ad page 619. Frank Bornhoffer, Mt. Washington, Ohio.

FOR SALE—200 colonies, 4 locations, 4 main crops, $1250. R. H. Yearnshaw, Maxwell, Calif.

TRY ACHORD'S BEES and QUEENS. Price list by return mail. W. D. Achord, Fitzpatrick, Ala.

AM now ready to send queens by return mail. Dr. Miller's strain, $1.00 each. S. G. Crocker, Jr., Roland Park, Baltimore, Md.

3-BANDED ITALIAN QUEENS. Untested, 90c each; tested, $1.40 each; satisfaction and no disease guaranteed. J. J. Scott, Crowville, La.

PHELPS GOLDEN QUEENS will please you Mated, $2.00; 6, $10.00; or $18.00 a doz. C. W. Phelps & Son, Binghamton, N. Y.

TWO-POUND package bees with untested Italian queen, $5.00; 3 lbs., $7.00. Safe delivery guaranteed. C. H. Cobb, Belleville, Ark.

FOR SALE—Bright Italian queens, 1, $1.00; 12, $10.00; 100, $75.00. Safe arrival guaranteed. T. J. Talley, Greenville, R. D. No. 3, Ala.

FOR SALE—July 1, Buck Goldens. 1 queen, $1.00; 6 queens, $5.00; 12 queens, $10.00; virgins, 40c. W. W. Talley, R. D. No. 4, Greenville, Ala.

FOR SALE—50 colonies of bees in good condition. Movable frames, part on full sheets. Ten-frame, used hives. Write Roy Killin, Pine Village, Ind.

FOR SALE—Early package bees, nuclei and queens. We handle 1800 colonies. Shipping season March 1 to June 1. Loveitt Honey Co., Phoenix, Ariz.

GOLDEN Italian queens for sale. One queen, 90c; 6 queens, $5.00; 12, $9.00; 100, $65.00. Safe arrival and satisfaction guaranteed. J. F. Rogers, Rt. 3, Greenville, Ala.

FOR SALE—150 colonies Italian bees. No disease. Good breeding. Entire equipment for extracted-honey production. 10 frame hives. Wired combs in Hoffman frames. Everything first class. S. D. Clark, Bayfield, Wis.

"SHE-SUITS-ME" queens, line-bred Italians, $1.50 each; 10 to 24, $1.30 each. See back cover of January number. Allen Latham, Norwichtown, Conn.

ELTON WARNER'S QUALITY QUEENS—Progeny of his famous Porto Rican breeding stock. Write for price list. Elton Warner Apiaries, Asheville, N. C.

QUEENS—For summer and fall. Write for prices and guarantee, state quantity desired and when shipment wanted. I can fill your orders. J. L. St. Romain, Hamburg, La.

WE ARE booking orders now for spring delivery for the famous "Colorado Queens." Send your order early so as to be sure to get your queens. C. I. Goodrich, Wheatridge, Colo.

FOR SALE—Three-band Italian queens, select untested, $1.00 each; $9.00 per doz. 2-lb. package with queen, $5.00. Satisfaction guaranteed. W. T. Perdue & Sons, Fort Deposit, Ala.

BEES BY THE POUND — Also QUEENS. Booking orders now. FREE circulars, giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas. E. B. Ault, Prop.

BIG SAVINGS on select three-banded Italian queens, gentle, prolific and hustlers. Second to none. One, 85c; 6 for $4.25; 12, $8.00. Ship all orders within 24 hours. J. L. Morgan, Gen. Mgr. Tupelo Honey Co., Columbia, Ala.

TRY MY CAUCASIAN OR ITALIAN three-frame nuclei at $5.00 each, with untested queen. Tested, $1.50; untested, $1.00, of either kind. No disease. Peter Schaffhauser, Havelock, N. Car.

GOLDEN QUEENS that produce large beautiful bees, solid yellow to tip, very gentle and prolific. Untested, $1.25 each; select tested, $3.00 each; breeders, tested, $5.00. Dr. White Bee Co., Sandia, Texas.

FOR SALE—Leather-colored Italian queens, tested, until June 1, $2.50, after $2.00. Untested $1.25; 12, $13.00. ROOT'S GOODS, ROOT'S PRICES. A. W. Yates, 15 Chapman St., Hartford, Conn.

WARRANTED PURE-MATED Italian queens in special sure introducing cages; first order, $1.25 each. 30 years' experience in queen-rearing. No honey in queen candy. Daniel Danielson, Brush, Colo.

COLORADO HEADQUARTERS for QUEENS—Northern-bred leather-colored three-band Italians. Safe arrival guaranteed. Send for circular and price list. Loveland Honey & Mercantile Co., Loveland, Colo.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, $1.00 each; $10.00 per dozen; $75 per 100. Pure mating, safe arrival and satisfaction guaranteed.

FOR SALE—Golden Italian queens, untested, $1.00; 6 for $5.40; 12 or more, 80c each; tested, $1.40 each. Good honey-gatherers, hardy and gentle. No disease. Safe arrival. Hazel V. Bonkemeyer, Randleman, R. D. No. 2, N. C.

BRIGHT ITALIAN QUEENS, $1.00 each, 10% less in dozen lots. Pure mating, safe arrival and reasonable satisfaction guaranteed in U. S. and Canada. Write us for prices on package bees. We have them in season. Graydon Bros., Rt. 4, Greenville, Ala.

SPICER'S three-band Italian queens by return mail. If you are interested in improving your stock and getting larger returns from your bees, head your colonies with these queens. Untested $1.00; 6, $5.50; 12, $10.00; tested, $2.00 each. Robt. B. Spicer, Wharton, N. J.

PACKAGE BEES—$1.50 per pound. Untested Italian or Carniolan queens, $1.25 each. Circular free. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

FOR SALE—Golden Italian queens, 1 untested, $1.00; 6 for $5.00; tested, $2.00; hybrids, 3 for $1.00. J. F. Michael, Winchester, R. D. No. 1, Ind.

QUEENS—Golden or three-banded Italians of highest quality. Every one guaranteed or your money back, 75c each; 6, $4.00; 12, $8.00. G. H. Merrill, R. D. No. 5, Greenville, S. C.

FOR SALE—Three-banded Italian queens, untested, $1.50 each; 6, $8.00. Ready now. Satisfaction guaranteed. Chas. W. Zweily, Willow Springs, Ill.

POOLE'S three-banded Italian queens are guaranteed to arrive safely and give satisfaction. Untested, 80c each; 25 or more, 75c; tested, $2.00. Rufus Poole, Greenville, Ala.

JENSEN'S queens may not be as cheap in price as some; but at the price we offer them they have few competitors, quality considered. Untested, 75c. Select untested, 90c. Jensen's Apiaries, R. D. No. 3, Crawford, Miss.

HEAD your colonies with Williams' Italian queens of quality and get more pleasure and profit from your bees. They produce bees that are gentle, hardy and hustling. Descriptive circular free. Select untested, 75c each. P. M. Williams, Ft. Deposit, Ala.

SPECIAL REDUCED PRICES on Italian queens for August and September. Untested, 1, $1.00; 6 $5.75; 12, $11.00; 50, $45.00; 100, $85.00. Tested, 1, $2.00; 6, $11.00. The place where you get the best. J. D Harrah, R. F. D., No. 1, Freewater, Oregon.

FOR SALE—60 colonies of bees, 100 supers, extractor tank, queen-excluders and complete outfit for extracted honey. Good location, building and lots, and retail honey trade. Reason for selling, poor health. Write for particulars. P. B. Ramer, Harmony, Minn.

TESTED QUEENS—One-year-old tested three-banded Italian queens, descended from the famous Moore strain. Were reared in full colonies and are very fine queens. Price, $1.50 each; 6 for $8.50; 12 for $16.00. Safe arrival and satisfaction guaranteed. Elmer Hutchinson & Son, Lake City, Mich.

FOR SALE—DEPENDABLE GOLDEN ITALIAN QUEENS add beauty to your bee quality. Virgins, 60c; 5 for $2.50; untested, $1.00; 6 for $5.00; select untested, $1.50; 6 for $6.50; tested, $2.50; 5 for $10.00; selected, $3.00; breeders, $5.00. Safe arrival and quality guaranteed. S. H. Hailey, Pinson, Tenn.

BALANCE of season we will furnish a 2-lb. package of our three-banded hustlers with a select untested queen for $4.75; 25 or more, $4.50 each. Select untested queens from our best breeders, $1.00 each; $10.00 per doz. Tested, $1.50 each; $15.00 per doz. Caney Valley Apiaries, J. D. Yancey, Mgr., Bay City, Texas.

GOLDEN ITALIAN QUEENS—Bred from finest strain in U. S. Mated to select drones. THEY POSSESS THE QUALITIES WHICH MAKE BEEKEEPING PROFITABLE. Untested, 75c; dozen, $7.50; virgins, 25c; tested, $1.50. Safe arrival and satisfaction guaranteed. Crenshaw County Apiary, Rutledge, Ala.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness and perfect markings. Price, $1.25 each, 12, $1.00 each. Special prices on larger orders. Send for circulars. J. H. Haughey Co., Berrien Springs, Mich

FOR SALE — Golden Italian queens — good queens at low price. Untested, $1.00; 6 for $5.40; 12 or more, 80c each; tested, $1.50 each; select tested, $2.50 each. No disease of any kind. Bees very gentle and good honey-gatherers, not apt to swarm unless crowded for room. 18 years a queen-breeder. D. T. Gaster, Randleman, R. D. No. 2, N. C.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you want. They are GREAT HONEY-GATHERERS, BEAUTIFUL and GENTLE. Virgins, $1.00; mated, $2.00; 6 for $10.00, or $18.00 per doz.; tested, $5.00. Breeders, $10.00 to $20. Safe arrival guaranteed only in the U. S. and Canada. C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE—1000 colonies bees, 10-frame Langstroth hives, fully equipped for comb and extracted honey, auto truck, big warehouse, located at Laurel, Montana, one of the best honey-producing sections in Montana; $7.50 per colony, with or without locations. Weber Brothers Honey Co., Blackfoot, Idaho.

HOLLOPETER'S ITALIAN QUEENS are bred up to a standard and not down to a price, yet price is low where quality and service count. Select untested each, $1.25; 6, $7.00; 12, $13.00; 25, $25.00. Write for mailing date and price on larger lots for requeening. Pure mating, no disease, safe arrival and satisfaction guaranteed. J. B. Hollopeter, Rockton, Pa.

LAST fall I had selected and tested six queens. Will use them as breeders this season in my queen yard. Their surplus honey capacity is from 216 lbs. to 288 lbs. each. I guarantee that every queen bought of me in 1922 is to be the daughter of one of these queens. Bees are three-banded. Mated, in June, $1.25 each; 6, $7.00; 12, $13.50; 25 or more, $1.00 each. After July 1, $1.00 each straight. Julius Victor, Martinsville, N. Y.

On account of old age, I will sell 350 colonies of bees, with or without locations. These bees are equipped with 300 extracting supers with combs built on wired foundation and 500 comb-honey supers. They produced last year 23 tons of extracted and comb honey and will do as well or better this year. Price, $2200. Terms, one-half cash, balance in one year with bees as security. M. A. Gill, Hyrum, Box 26, Utah.

FOR SALE—250 to 350 colonies of fine Italian bees on good straight L combs with a full equipment of supplies for extracted-honey production. Also 47 acres land in Harrison County, Iowa, near town; has about 20 acres fine natural basswood grove. Has good improvements, especially for beekeeping. Probably as good an equipment as there is in the state. This is a good paying business, with outyards already established, everything complete. Can give long time on part of the price, but would require $8000 or $9000 to swing it. Any one having that much capital to invest in a dandy country home and a paying business, will find it by addressing E. S. Miles & Son, Dunlap, Iowa.

BEES FOR SALE in lots of one colony up to 100 or more, as desired or a series of outyards, including small house in town, 32-foot honey-house, 8-frame power extractor, engine, sawtable, 150 new hives in K D Ford auto, and various other items required in this line of business. Past 19 years I've produced upwards of 75 tons of honey in this locality. If whole outfit is wanted it can be bought as a going concern, by paying 25% down, and balance remain one, three or five years at 7% with acceptable backing of notes. Cause for selling, doctor's insistance, age, ill health, and laziness on my part. Correspondence solicited. A. W. Smith, Birmingham, Mich.

MISCELLANEOUS.

FOR SALE—Golden seal seed. S. Pitts. Stronghurst, Ills.

THE BEE WORLD.—The leading bee journal in Britain, and the only international bee review in existence. It is read, re-read and treasured. Will it not appeal to you? Specimen copy free from the publishers. The Apis Club, Benson, Oxon, England. Send us a post card today. It is well worth your little trouble.

MEDICINAL roots and herbs are very profitable to grow. We especially recommend growing Golden Seal which with good care will yield as high as $10,000 per acre for each crop. It takes several years to mature but will average $1000 a year. Special Crops, a monthly paper, tells how. Sample copy, 10c. $1.00 per year. Address Special Crops Pub. Co., Box "G" Skaneateles, N. Y.

TOO LATE TO CLASSIFY.

WANTED—Partner in farming and beekeeping. C. E. Watts, Meredith, N. H.

FOR SALE—Finest quality clover honey in 60-lb. cans, 2 to a case, at $15 a case, also in 5-lb. pails, $1 each, all f. o. b. here. Sample 10c. Write me. Edw. A. Reddout, New Woodstock, N. Y.

FOR SALE—On account of the death of the owner, 400 colonies of bees with surplus equipment for about 300 more, located in Central Texas where there is a good honey flow almost the entire year. Plenty of room for expansion. Address Mrs. T. N. Bemus, 116 E. Dewey Place, San Antonio, Texas.

PATENTS---TRADEMARKS

I offer prompt, personal and expert professional service. 10 years' experience. Write for terms. **LESTER SARGENT, Patent Attorney, 524 Tenth St., N. W., Washington, D. C.**

QUEENS — QUEENS

LARGE, leather-colored 3-banded Italian queens; 10-years selection, bred for honey-gathering; gentle, hardy and long-lived. Price: Select untested, 1, $1.25; 6, $6.50; 12, $12. After July 1: 1, $1; 6, $5; tested, $1.50 each. Write for price on large orders. Free booklet, "How to Transfer, Get Honey and Increase."

J. M. GINGERICH, KALONA, IOWA.

INDIANOLA APIARY offers Italian Bees and Queens for following prices: Untested Queens, $1.00 each; Tested Queens, $1.50 each. Bees, per lb., $2.00. Nucleus, $2.00 per frame. No disease. Bees inspected.

J. W. SHERMAN,
Valdosta, Georgia.

Ohio State Field Meet

—To be held at—

Delphos, Ohio, Wed., Sept. 13

A. I. ROOT, E. R. ROOT,
GEO. S. DEMUTH, DADANT & SONS,
Scheduled to be present.

Special Program.

All beekeepers and any one interested in beekeeping and honey invited to attend. Largest display of honey and bee supplies ever exhibited in the central states.

I. F. MILLER'S STRAIN

Italian Queen Bees

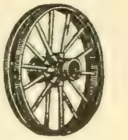
From my best SELECT BREEDERS; gentle, roll honey in, hardy, winter well, not inclined to swarm, three-banded, 28 years' breeding experience. Satisfaction guaranteed. Safe arrival in U. S. and Canada.

1 Untested, $1.25; 6, $7.00; 12, $12.00.
1 Sel. Unt., $1.50; 6, $8.00; 12, $14.00.

I. F. MILLER,
Brookville, Pa., 183 Valley.

Write for Book Today

FARM WAGONS



High or low wheels—steel or wood—wide or narrow tires. Steel or wood wheels to fit any running gear. Wagon parts of all kinds. Write today for free catalog illustrated in colors.

ELECTRIC WHEEL CO., 23 Elm Street, Quincy, Ill.

HONEY

We are in excellent position to serve beekeepers who do not produce enough Honey to supply their trade. We have a big stock of fine table honey of various grades always on hand. **In 60-lb. Tins Crystallized—Water White Orange, 15c; White Sage, 14c; Extra L. A. Sage, 12c; Buckwheat, 10c.**

GLASS AND TIN HONEY CONTAINERS.

2½-pound cans	**Crates of 100, $4.50**
5-lb. pails (with handles), 1 dozen reshipping cases	**$1.00 case; crates of 100, $7.00**
10-lb. pails (with handles)	**Crates of 50, $5.25**
60-lb. tins, 2 per case	**New, $1.20 case; used, 25c**

White Flint Glass, with Gold Lacquered Wax Lined Caps.

8-oz. honey capacity	$1.50 per carton of 3 doz.
16-oz. honey capacity	$1.20 per carton of 2 doz.
Qt. 3-lb. honey capacity	90c per carton of 1 doz.

HOFFMAN & HAUCK, Inc.
WOODHAVEN, NEW YOR K.

ROOT QUALITY QUEENS

At Reduced Prices in Quantity Lots.

Your success or failure in securing the maximum crop of honey next season depends largely upon the quality of queens you introduce into your colonies this fall.

Why not play safe and order ROOT QUALITY QUEENS which will mean more honey profits for you.

The Different Grades of Queens.

Italian queens are distinguished from blacks by three yellow bands on the upper part of the abdomen. Leather-colored Italians show three stripes of dark-yellow leather color.

An untested queen is one which is sold after she is found to be laying, not having been previously tested.

A tested leather-colored queen is one which has been examined by the breeder and her bees found to be uniformly marked with at least three dark-yellow bands.

Select queens of any of the grades are those which show better color, size, shape, etc. Frequently select untested queens develop into fine breeding queens.

Prices to October 1.

	1 to 9.	10 to 24.	25 to 49.	50 to 99.	100 or over.
C312000—Untested	$1.50 ea.	$1.25 ea.	$1.10 ea.	$1.00 ea.	$0.90 ea.
C313000—Sel. Untested	2.00 ea.	1.70 ea.	1.55 ea.	1.45 ea.	1.35 ea.
C314000—Tested	2.50 ea.	2.10 ea.	2.00 ea.	1.85 ea.	1.75 ea.
C315000—Select Tested	3.00 ea.	2.50 ea.	2.40 ea.	2.25 ea.	2.00 ea.

Our Guarantee on Queens.

We guarantee safe arrival of queens sent in mailing cages. We agree to refund the money or replace the queen if the one first sent arrives dead; provided the beekeeping receiving the dead or unfit queen returns her at once and in her own shipping cage, properly marked with name and address of sender. No delay in returning the queen can be permitted. This guarantee applies only on queens sent to customers in the United States and Canada.

Mail all queen orders direct to Medina or to our nearest branch office.

THE A. I. ROOT COMPANY

WEST SIDE STATION MEDINA, OHIO

Midsummer Days in California. Cont'd from p. 587

brannies. Whether they asked for honey or not I consider his use of it in response to those letters a tribute to nature's only concentrated sweet. Also it shows he is a well-informed young man, and you may be sure we took pains he should be even more so; at least, in regard to the food value of honey, by sending him some literature on the subject. He gave us a sample of the honey brannies, and although they were made some five weeks before they were deliciously crisp. He guarantees them to remain crisp as long as the package is unbroken.

This may appear to be giving brannies some free advertising. Perhaps half the civilized world is in need of more "roughage" in the diet to provide better elimination and will be as long as we continue to use so many over-refined foods. For that reason brannies are likely to increase in popularity, and, if we honey people take pains to ask for honey brannies and tell our friends about them, it will open one more avenue to the sale of honey.

Queens - Golden - Queens

Have you secured all you need? I have them as fine as you can secure anywhere at a reasonable price. Untested, $1.00; six, $5.50; 12, $10. If they don't give you satisfaction and you write me, I will make it satisfactory to you.

E. A. SIMMONS, GREENVILLE, ALA.

75c EACH

One or more SELECT Untested Three-Banded Italian Queens. No poor-appearing queen will be sent. A satisfactory sale guaranteed. No disease.

D. W. HOWELL, SHELLMAN, GEORGIA.

ROOT QUALITY BEES AND BEEKEEPERS' SUPPLIES.

Bees in the hive, in packages, and nuclei, three-banded leather-colored Italian queens. Let a beekeeper of long standing serve you in your requirements for 1922. Catalog on request.

O. G. RAWSON,
3208 Forest Place, East St. Louis, Illinois.

NEWMAN'S QUEENS

Originated from the world-famous Moore strain of Italians. Absolutely first quality and fully guaranteed, no disease. Satisfaction and safe arrival.

Untested: 1, $1.25; 6, $6.00; 12, $11.00.
Sel. Unt.: 1, $1.75; 6, $8.00; 12, $15.00.

Circular free.

A. H. NEWMAN, Queen-Breeder.
Morgan, Kentucky.

MACK'S QUEENS

75c EACH

We are uniting our nuclei this month and are making the price so that they will move in a hurry. Send in a trial order and be convinced that Mack's queens are unexcelled. If unable to fill your order, it will be promptly returned. All queens guaranteed.

Untested, 75c ea. Select Untested, 90c ea.

HERMAN McCONNELL
ROBINSON - - - - - - ILLINOIS

Goldens the Best

14 years in business should give you best queens possible. Untested, $1. or 6 for $5; in lots of 25 or more, 75c each. Virgins, 40c each, or 3 for $1. Satisfaction and promptness my motto.

R. O. COX, Box 25, RUTLEDGE, ALABAMA.

Would exchange some of our queens for supplies for next year's supply. We need 10,000 queen cages, three-hole complete without candy, 1000 metal spaced Hoffman frames, 50 double-walled hives, 50 single-walled hives, 100 metal covered tops, 200 inner covers without bee-escape hole, 150 lbs. medium brood foundation. Everything must be new and in the flat and in ten-frame standard equipment. Write and tell us what you have to offer.

W. G. Lauver, Middletown, Pa.

FOR SALE.—Safety Comb honey cartons for sections, size 4¼x4¼x1⅞; 4¼x4¼x1½; 4x5x1⅜; 4x5x1½; 3⅝x5x1½; 4¼x4¼x1⅜; 4¼x4¾x1½; 4¼x4¼x1¾; 4¼x4¾x1⅜; for 50 cents per hundred, so long as present stock last. Sections equipped with these safety cartons will fit in the regular 24-pound shipping cases and insure safe shipment of honey. They are appropriately printed on all four sides. Send for sample. THE A. I. ROOT COMPANY, Medina, Ohio.

Lockhart's Silver-gray Carniolans

"LINE BRED" for the past 34 years. They are VERY hardy, gentle, prolific, great workers, and builders of VERY WHITE comb, and use mostly wax in place of propolis. Prices of queens for 1922: Untested queens, $1.00; select untested, $1.50; tested, $2.00; select tested, $3.00. Breeders, $5.00, $10.00. Safe arrival guaranted in U. S. and Canada. No foul brood here.

F. A. LOCKHART & COMPANY, LAKE GEORGE, NEW YORK

Prices for the Remainder of the Season

QUEENS

1 to 4 inclusive, $2.00 each

5 to 9 inclusive, $1.95 each

10 or more, $1.90 each

Breeders, $10.00 each

Introducing Cages, 75c each

JAY SMITH

ROUTE THREE. VINCENNES, INDIANA

QUEENS

OUR OLD RELIABLE THREE-BANDED ITALIANS ARE HONEY GETTERS.

They are gentle, prolific, and very resistant to foul brood. Orders booked for one-fourth cash. Safe arrival guaranteed. Circular free.

PRICES

	1	6	12
Untested	$1.00	$5.50	$10.00
Select Untested	1.25	6.50	12.50
Tested	2.25	12.50	24.00
Select Tested			$3.00 each

See our Dec. and Jan. Advertisement.

JOHN G. MILLER

723 C Street, Corpus Christi, Texas.

QUEENS

Reliable Three-Banded Italians

Western Beekeepers, now is the time to requeen those colonies. Head them with one of our vigorous young queens and be assured of having strong colonies in the spring when every bee counts. We can supply you promptly at the following prices:

Untested—1, $1.00; 5, $4.50; 10 to 50, 80c each; larger lots, 75c each. Tested—1, $2.00; 10, $17.00.

The Orange Apiaries, Porterville, Cal.

O. F. Darnell, Prop. M. S. Fortune, Queen-Breeder.

Bee Supplies

SPECIAL PRICES ON THE FOLLOWING NO. 2 SECTIONS.

100,000 4¼x4¼x1½ Plain at $7.00 per 1000

50,000 4¼x4¼x1¾ Two-beeway at $8.00 per 1000

The above are all packed 500 to a crate.

REDUCED PRICES ON TIN AND GLASS HONEY CONTAINERS.

Send us a list of your requirements of containers, and we will make you prices that will save you money.

We can make shipment the same day order is received.

We carry a complete line of EVERYTHING FOR THE BEEKEEPER, and can make prompt shipment. Write for our catalog.

A. H. RUSCH & SON CO.

REEDSVILLE, WISCONSIN.

Big Reduction

--ON--

Bee Supplies

Shipping cases	$30.00 per 100
Slotted section-holders	$3.00 per 100
Sections, 1⅞, No. 1	$10.00 per 1000
Job lots of frames, regular size	$3.00 per 100
Standard Hoffman frames, 9⅛ deep	$4.50 per 100
Unspaced wedged top-bar frames, 9⅛ deep	$2.75 per 100

Send for Catalog and Price List.

CHARLES MONDENG

146 Newton Avenue N. and
159 Cedar Lake Rd.
MINNEAPOLIS, MINN.

NEW ENGLAND

Beekeepers will find a complete line of the best supplies here. Send in your order early and be ready for the harvest. Remember this is the shipping center of New England. Write for new catalog.

H. H. JEPSON

182 Friend Street. BOSTON 14, MASS.

MASON BEE SUPPLY COMPANY,
Mechanic Falls, Maine.

From 1897 to 1922 the Northeastern Branch of The A. I. Root Company.

PROMPT AND EFFICIENT SERVICE

BECAUSE—Only Root's Goods are sold.
It is a business with us—not a side line.
Eight mails daily—Two lines of railway.
If you have not received 1922 catalog send name at once.

HONEY CONTAINERS

Prompt Shipment, F. O. B. Brattleboro, Vt.

1-pound Round Jars, per case of 24	$1.20
1-pound Round Jars in Crates of 12½ Dozen, per Crate	7.00
2-pound Round Jars, per Case of 12	.90
2½-pound Friction Top Cans, per Box of 24	1.10
2½-pound Friction Top Cans, per Carton of 100	4.00
5-pound Friction Top Pails, per Carton of 50	3.25
10-pound Friction Top Pails, per Carton of 50	4.50
5-gallon (60-pound) Square Cans, per Case of 2, in 10 Case Lots	10.50

F. COOMBS & SONS, BRATTLEBORO, VERMONT

ITALIAN BEES AND QUEENS, HONEY, BEESWAX AND APIARIAN SUPPLIES.

DON'T DELAY---GET OUR PRICES

WE SAVE YOU MONEY

"Falcon"

SUPPLIES --- QUEENS --- FOUNDATION

W. T. FALCONER MFG. COMPANY

FALCONER (Near Jamestown), NEW YORK.

"Where the best beehives come from."

BANKING BY MAIL AT 4%

A.T.Spitzer
PRES.

E.R.Root
VICE PRES.

E.B.Spitzer
CASHIER

For Yourself or For Others?

You are either using your money for the benefit of yourself or of others. Spend it needlessly, and "the other fellow" profits. Save, and YOUR future is protected. Build up a 4% Savings Account in the Savings Deposit Bank Company. Deposits may be sent safely and conveniently BY MAIL.

The SAVINGS DEPOSIT BANK CO.

THE HOME OF THE HONEY-BEE MEDINA, OHIO

Queens Queens

Knight's Three-Banded

Give them a trial and be added to my book of satisfied customers.

Prices for Balance of Season.

1 Select Untested......	$1.00
5 Select Untested......	4.75
10 Select Untested......	8.50
Tested Queens, each....	2.00

For large quantities write for prices. Have the bees, men and equipment to handle rush orders by return mail. Pure mating and satisfaction guaranteed. It is left with customer to say what is satisfaction. No disease.

JASPER KNIGHT

HAYNEVILLE - - ALABAMA

BUCKWHEAT

ITALIAN QUEENS

Our very best queens are reared this month during the flow from goldenrod. Conditions are ideal for queen-rearing now.

SELECT THREE-BANDED

(Note—We begin this month to unite nuclei for winter, and we will sell queens taken from these, as we unite them, for $1.00 each. Our regular quality, but shipment to be made at our convenience, hence the lower price.)

Untested, each, $1.25; 6, $7.00; 12, $13.00; 25, $25.00.

WE GUARANTEE
safe arrival in U. S. and Canada, pure mating, no disease, and satisfaction.

J. B. HOLLOPETER

ROCKTON, PENNSYLVANIA.

QUIGLEY QUALITY

Italian Queens and Bees are produced by double grafting, producing queens of superior quality and long-lived bees, filling your big hives with bees. Hustlers, hardy, wintering on summer stands. No disease; 36 years in this location. Purity and satisfaction guaranteed.

Untested—Each, $1.25; 6 for $7.00; 12 for $12.00. Select Untested, add 50c each extra. Tested, $2.00 each.

Send for circular.

E. F. QUIGLEY & SON

UNIONVILLE, MISSOURI.

——QUEENS OF——

MOORE'S STRAIN

OF ITALIANS PRODUCE WORKERS

**That fill the supers quick
With honey nice and thick.**

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc. I am now filling orders by return mail. Untested queens $1.25; 6, $6.50; 12, $12. Select Untested, $1.50; 6, $8.00; 12, $15. Safe arrival and satisfaction guaranteed.

J. P. MOORE, Queen Breeder
Route 1, MORGAN, KENTUCKY.

SCOTT QUEENS ARE GOOD QUEENS

MY QUEENS ARE GETTING RESULTS.

Among my hundreds of colonies and for my customers. One writes: "Dear Mr. Scott: Please book me for ½ doz. queens. Those I got from you last season have made 150 lbs. comb honey each so far this season. Yours truly."—(Name on request.

GOLDEN OR THREE-BANDED QUEENS.

After July 1: One, $1.25; six, $7.00; dozen, $13.00. They are bound to please. Pure mating and safe arrival. Prompt shipments. Circular on request.

ROSS B. SCOTT, LA GRANGE, INDIANA.

BEEKEEPERS' SUPPLIES.

The kind you want and bees need. Good stock of the A. I. Root Co.'s make of goods on hand. Catalog free. Beeswax wanted.

ALWAYS ON TOP

J. NEBEL & SON SUPPLY CO., High Hill, Mo.

KITSELMAN FENCE

GET IT FROM THE FACTORY DIRECT

"Saved 24c a Rod," writes William Henry, Ripley, O. **You, too, can save** by buying direct at Lowest Factory Prices. **WE PAY THE FREIGHT.** Write today for Free 100-page Catalog of Farm, Poultry and Lawn Fence, Gates, Posts and Barbed Wire.

KITSELMAN BROS. Dept. 21 MUNCIE, IND.

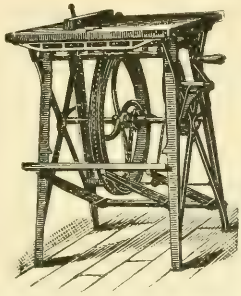
BARNES' HAND & FOOT POWER MACHINERY

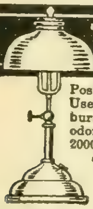
This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial

Send for illustrated catalog and prices.

W. F. & JOHN BARNES CO.
545 Ruby Street
ROCKFORD, ILLINOIS.





The "BEST" LIGHT

Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles. 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog. AGENTS WANTED EVERYWHERE

THE BEST LIGHT CO.
306 E. 5th St., Canton, O.

World's Best Roofing at Factory Prices

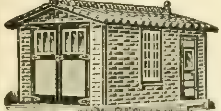
"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofing, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Save money—get better quality and lasting satisfaction.

Edwards "Reo" Metal Shingles

have great durability—many customers report 15 and 20 years' service. Guaranteed fire and lightning proof.

Free Roofing Book

Get our wonderfully low prices and free samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No. 183



LOW PRICED GARAGES

Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles.

THE EDWARDS MFG. CO.
933-983 Pike St. Cincinnati, O.

FREE Samples & Roofing Book

Better Way to Garden

Don't do garden work the slow back-breaking way. You can grow a far better garden, easier and with much less time and work.

BARKER

WEEDER, MULCHER AND CULTIVATOR

THREE MACHINES IN ONE

Simply push the BARKER along the rows (like a lawn mower). Eight blades revolving against a stationary underground knife destroy the weeds and in same operation break up the surface crust into a **level, porous, moisture-retaining mulch.** Aerates soil. Intensive cultivation. "Best Weed Killer Ever Used." Has leaf guards, also shovels for deeper cultivation. A boy can run it—do more and better work than 10 men with hoes.

Write Us Today for FREE Booklet.

Let us tell you about this machine and how to raise bigger, better gardens—make gardening a pleasure. A valuable book, illustrated. Gives prices, etc. A card brings it. Write us today. Use coupon below.

BARKER MFG. CO.
Box 23 DAVID CITY, NEB

GARDENING for Profit and Pleasure

Barker Mfg. Co., Box 23, David City, Neb.

Gentlemen: Send me postpaid your free booklet and Factory-to-User offer.

Name ....

Town ....

State .... RFD or Box ....

A SUPERIOR QUALITY AT LESS COST

Supplies

(MADE BY THE DIAMOND MATCH CO.)

A SUPERIOR QUALITY AT LESS COST

The Diamond Match Co., who manufacture our supplies, are the largest manufacturers in the world who make bee supplies. They own their own timber lands, mills and factories. We pass on the full advantage of the resulting low production cost to the Beekeeper.

One-Story Complete Dovetailed Hive

With metal telescope cover, inner cover, reversible bottom, Hoffman frames, nails, rabbets.

Standard Size.

Crate of five, K. D., 8-frame	$12.65
Crate of five, K. D., 10-frame	13.25

Jumbo Size.

Crate of five, K. D., 10-frame	14.25

Hive-Bodies

With Hoffman frames, nails, rabbets.

Standard size, crate of 5, K. D., 8-fr.	$5.20
Standard size, crate of 5, K. D., 10-fr.	5.85
Jumbo size, crate of 5, K. D., 10-fr.	6.85

Hoffman Frames

Standard size	100, $5.20	500, $25.00
Shallow	100, 4.30	500, 21.00
Jumbo	100, 5.80	500, 28.00

Diamond Brand Foundation

Medium	5 lbs., 68c lb.	50 lbs., 65c lb.
Thin Super	5 lbs., 75c lb.	50 lbs., 72c lb.

Comb Honey Supers

For 4 x 5 x 1⅜ sections including section-holders, fence-separators, springs, tins and nails.

Crate of five, K. D., 8-frame	$5.60
Crate of five, K. D., 10-frame	6.00

HOFFMAN & HAUCK, INC.

WOODHAVEN, NEW YORK

REDUCED PRICES

We have had more orders than we could fill each year, yet we are striving just as hard to produce better queens each year as we would if we had more queens than orders, and we believe that each year we are able to produce queens of a little higher quality. We are not in the business for the time being, or to get every dollar out of it we can, but because we like to rear queens and we want to give you value received for your money. After we have reared the best possible queens for you, we want to put them to you, not just alive, so we can get your money, but in the best possible condition.

OUR GUARANTEE: This simply means that, if any queen we sell is not satisfactory in every respect, we will replace her. Our breeding stock and methods of production are such that we can give this guarantee.

Untested	One, $0.75; ten or more, $0.60 each.
Tested	One, 1.75; ten or more, 1.50 each.

We have 2,000 Tested Queens, reared late last fall, that we will supply at our convenience at $1.00 each, or ten or more at $0.80 each.

Send for big bargain list of **BEE SUPPLIES**. New sixty-pound cans, two to the case, in lots of fifty cases, at 91c.

The Stover Apiaries, Mayhew, Miss.

Requeen With

Forehand's 3-Bands

They Satisfy; Why?

Because they are guaranteed to be as good as money can buy. Not a cheap queen but a queen of the best at a cheap price. Every queen guaranteed to reach destination in first-class condition, to be purely mated and give perfect satisfaction or money back. Orders filled by return mail.

Untested, 1 to 25, 90c each; 25 to 50, 80c each; 50 to 100, 75c each. Select Untested, $1 each. Tested, $1.75 each.

Better Queens for Less Money

N. FOREHAND, RAMER, ALA.

SELECTED QUEENS

of the Highest Quality

Queens by return mail.
Three-banded queens our specialty.

Our queens produce bees that are wonderful honey-gatherers, gentle and most resistant to all diseases. We guarantee every queen we ship to give entire satisfaction. We clip wings free of charge on request. Safe arrival and prompt delivery are also fully guaranteed. There may be other queens just as good, but we believe you will find few better. To know them, try them.

PRICES.

Select untested	$0.75 each
50 or more	.60 each
Select Tested	1.50 each

Hayneville Apiary Co.
Hayneville, Ala.

FREE QUEENS

3-Banded *Goldens*

For September to make new customers we offer our fine strain of honey-gatherers at the lowest prices possible, and for ten of the highest honey records made from colonies headed with our queens, we will give one fine tested 3-banded or Golden queen free to each. For quick service send us your order. Now is the time to requeen.

Quality Queens—September Prices.

Untested, 1 to 12	$0.85 each
Sel. Untested, 1 to 12	1.15 each
Sel. Tested	2.00 each

Wings clipped free on request. Entire satisfaction and safe arrival guaranteed in U. S. and Canada.

Ohio Valley Bee Company
CATLETTSBURG, KY.

High Quality

Three-Banded

ITALIAN Queens

BY RETURN MAIL

Untested Queens, 1, $1.00; 6, $5.50; 12, $10.00; 25, $20.00.

Select Untested, 1, $1.15; 6, $6.20; 12, $11.40; 25, $22.25.

Select Tested, $1.75 each.

Safe delivery and fullest satisfaction guaranteed.

FRANK BORNHOFFER
MT. WASHINGTON (CINCINNATI), OHIO

1923 1923

Bees & Bee Supplies

ROOT QUALITY

We carry a complete line of A. I. Root Co. supplies. Send for catalog. We are now booking orders for our nuclei for the spring of 1923. Note what the following prominent beekeepers say about our nuclei and business methods.

> "In reference to your nuclei let me say I will have no hesitation in recommending you as to ability to put up bees for shipment or as to your business integrity.—R. F. Holtermann, Brantford, Canada.
>
> "The fifty nuclei arrived in fine shape and were packed in first-class order. I am well pleased with shipment.—Eldon Ankeman. Gowanstown, Ont., Canada.
>
> "Twenty-five nuclei arrived in excellent condition. This is something like buying bees.—Arthur F. Hodgson, Jarvis, Ont., Canada."

3-fr. Nuclei Italian Bees and Queen	**$5.00 ea.**
3-fr. Nuclei Black Bees and Italian Queen	**4.50 ea.**

One extra pound of bees with each nucleus, and safe arrival, free from disease guaranteed. One-third down with order to guarantee acceptance.

A. R. IRISH
BOX 134. SAVANNAH, GEORGIA

QUEENS

ITALIANS - CARNIOLANS - GOLDENS

We ship thousands of queens and thousands of pounds of bees all over the United States and Canada every year.

2-comb regular Nuclei, no extra bees	$3.75
3-comb regular Nuclei, no extra bees	5.25
2-comb regular Nuclei with 1 pound extra bees	5.25
1-comb regular Nuclei with 2 pounds extra bees	5.25
1-lb. pkg. bees, 2.25 ea.; 25 or more	2.15
2-lb. pkg. bees, $3.75 ea.; 25 or more	3.60
3-lb. pkg. bees, $5.25 ea.; 25 or more	5.00

QUEEN FREE with all of the above packages except 1-pound size; will furnish them at half price with these.

PRICES OF QUEENS ONLY.

1 Untested Queen, $1.05 each; 25 or more, 91c each; per 100	$85.00
1 Select Untested, $1.19 each; 25 or more, $1.05 each; per 100	95.00
1 Tested Queen, $1.57; 25 or more, each	1.40
1 Select Tested Queen, $1.85 each; 25 or more, each	1.57
Breeders, each...$5.00, $10.00 and	$15.00

Send for **FREE** circular.

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Shipped by return mail.

Let me have your order for the 1922 season. My queens are bred by men who know how. Every order given my personal attention. All queens reared in strong two-story, ten-frame hives, under natural conditions.

Improve your weak, run-down colonies by using young, vigorous three-banded Italian Queens from my imported stock.

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We quote as follows:

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2½-lb. cans	$1.15	$2.15	$4.10	$7.75	$18.75	$36.00
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All packed in fibre containers. They keep neat and clean till you use them. Prices F. O. B. cars Lansing and not from some distant shipping point.

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Whether you have only a few colonies or five hundred, we believe you will like them and they will prove a worthy addition to your yard. They are a bright, hustling, three-banded strain, bred primarily for honey production, but also gentleness and color. We have spared neither labor nor expense to make them the very best.

Price of Queens, June 15th to October 1.

Untested......................................1 to 19, 75c each; 20 or more, 70c each
Select Untested ....$1.10 each; 5 or more, $1.00; 10 or more, 90c; 25 or more, 80c
Tested...$1.75 each; 5 or more, $1.65

Safe arrival and satisfaction guaranteed.

W. D. ACHORD, FITZPATRICK, ALABAMA.

HONEY
WE PRODUCE IT
WE SELL IT.

Now Sell Your Honey

And Sell It Well.

The beekeeper who has produced a good crop of honey has one more important thing to do he must sell it. Selling "caps the climax" of the year's work. If he fails as a salesman, much of his hard and careful work in producing a fine crop of honey becomes a failure. Brains, ingenuity, enterprise, patience, good sense and good business are needed in selling the crop and so "bringing home the bacon."

We want to urge upon every beekeeper who has a possible local market to develop that market. By making a local market for his honey, the beekeeper assures himself of success and profit year in and year out. It is in his selling methods that the average beekeeper needs to better his practice and do some hard thinking.

Honey is not hard to sell. It has more "talking points"—it has more interest in it, if you please, than butter, eggs and cheese combined.

What honey needs to sell well is to be put into neat, attractive packages, and then taken to the right place in the right way. Remember, "honey to sell well, must look well." Also remember that honey to sell well must be taken to the right market, talked well and advertised well. It won't sell itself.

To help the beekeeper sell his honey we have just printed a handsome little booklet entitled

"How To Sell Honey."

We have put, into this booklet, the best ideas of the best honey sellers we know. Its aim in chief is to tell the honey producer how to develop a local market for his honey. It gives him the best business ideas on his selling problem. And it is free. Just drop us a postal card and tell us to send you "How to Sell Honey," and we will send it by the next mail.

Aids to Honey Selling.

To sell honey well, the beekeeper may need some of the following articles:

Honey Labels, "Honey-for-Sale" Signs, Glass or Tin Containers, Recipe Booklets, Rubber Stamping Outfit, Mailing Cases, Business Cards, an Observation Hive, Shipping Cases, Letterheads, Glue (for labels), Comb Honey Cartons.

We shall be glad to quote you prices on any of these aids to selling. Our prices are very reasonable, quality the best. You surely will want to see our new honey-label catalog. It's a beauty. Send for it today.

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FOR SALE

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Gleanings in Bee Culture

THE FAREWELL SONG OF THE BEE

Farewell, said the bee to the flower,
  As she hung in its golden heart;
Full many a happy hour
  We have spent, but now must part

For the days are growing colder,
  And the nights come earlier now;
And the year is growing older,
  Soon snow will whiten his brow.

It breaks my heart to leave you,
  To know your beauty will fade;
That winter's cold grave will receive you,
  So lovely, so richly arrayed.

But there is one thought that is cheering,
  That will bring you some comfort, my dear;
In the seed-children you are rearing,
  You'll blossom again next year.

Then listen once more to my humming,
  Alas, my love, 'tis the last;
I shiver—a frost is coming,
  And summer—sweet summer is past.

LAURA M. GREGG

VOLUME L OCTOBER, 1922 NUMBER 10

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Don't do garden work the slow back-breaking way. You can grow a far better garden, easier and with much less time and work.

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WEEDER, MULCHER AND CULTIVATOR

THREE MACHINES IN ONE

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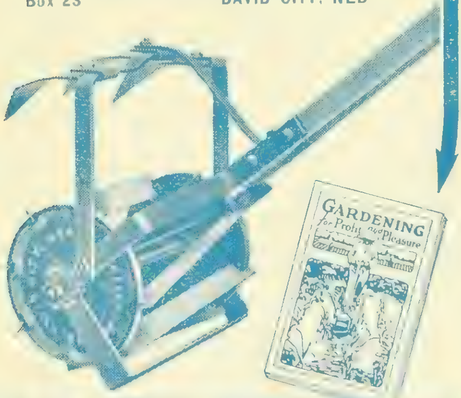
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for Profit and Pleasure

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Season of 1922

It will pay you to think of 1923 and get in your order for supplies early. From now on to the spring months we can give you prompt service.

Do not wait till you need the goods, but anticipate your needs so as to be prepared when next season arrives.

A. I. Root Co. of Syracuse, N. Y.
1631 West Genesee St.

QUALITY
TIN CANS
FIRST
For PACKERS and MANUFACTURERS of FOOD PRODUCTS
LARGE CAPACITY
LONG EXPERIENCE
YOUR INQUIRIES SOLICITED
W.W. BOYER & CO. INC.
BALTIMORE, MD.

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Entered as second class mail matter at the Postoffice at Medina, Ohio. Published monthly. Space occupied by reading matter in this issue, 76.5 per cent; advertising, 23.5 per cent.

THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

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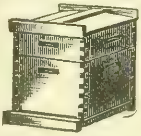

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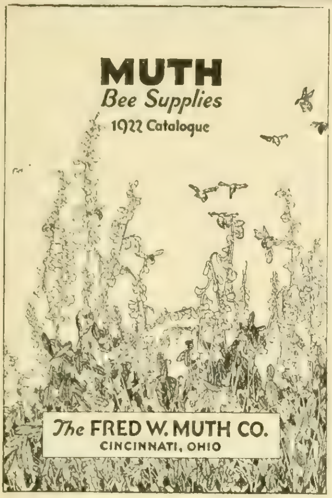
A MESSAGE FOR YOU



You need our new 1922 bee supply catalog more than ever before. Have you received one? Many new articles are listed for the saving of labor and greater honey production. Our attractive prices, superior quality and prompt service will always be appreciated by beekeepers.

Send a list of your requirements to us.

THE FRED W. MUTH COMPANY,
Pearl and Walnut Streets,
Cincinnati, Ohio.

Honey Containers

We have some interesting prices to offer on honey containers; send us a list of your requirements and let us quote you our prices.

2½-lb. cans in reshipping cases of 24 and crates of 100 and 500.
5-lb. pails in reshipping cases of 12 and crates of 100 and 200.
10-lb. pails in reshipping cases of 6 and crates of 100.
1-gallon square or oblong cans with 1¾-inch screw cap in boxes of 6.
1-gallon square or oblong cans with 1¾-inch screw cap in crates of 100.
60-lb. square cans with 1¾-inch screw cap in cases of 2 cans.
16-oz. round glass jars in reshipping cases of 2 dozen.
6½-oz. tin top tumblers in reshipping cases of 4 dozen.
Shipping cases for comb honey for any style sections in the 24-lb. or 12-lb. size.
Send for our catalog showing full line of Bee Supplies.

AUGUST LOTZ CO.
BOYD, WISCONSIN.

WE'LL SUPPLY YOU

BEE SUPPLIES

THAT ARE MADE TO SATISFY

Let us quote you prices before you place your order, and you will not be sorry.

Illustrated Catalog sent on request.

The best market prices for your beeswax.

WRITE TO

A. H. RUSCH & SON CO.

REEDSVILLE, WISCONSIN

HONEY MARKETS

U. S. GOVERNMENT MARKET REPORTS.

Information from Producing Areas (First Half of September).

CALIFORNIA POINTS.—Honey flow in southern California curtailed after orange flow by drouth. Crop alfalfa honey light due to damage to crop in northern section by adverse weather conditions and to reduction of acreage in southern California. Demand and movement moderate, market steady. Carloads f. o. b. usual terms, per lb., extracted: White orange mostly 9½c, white sage 8-8½c, light amber sage 6½-7c, light amber alfalfa 6¼-6½c. Comb: Buyers reported offering $2.70 per case for carlots f. o. b. Inyo County points, but no large sales reported.

INTERMOUNTAIN REGION.—Season practically over, although some beekeepers are removing supers to permit bees to fill up brood-chambers with any remaining honey which may be secured. Due to long summer drouth many sections secured little honey after July. Grasshoppers have been generally harmful. Utah beekeepers especially complain of enormous quantities of a ground bee which has gathered most available nectar. Bees in Arizona now said to be making honey fast from cotton. Crop for the section as a whole far below normal. Many reports of a 50 to 60% crop, or less, received. Demand reported very slow and lighter than last year. Color of honey generally very good. A few carlot sales of white clover and alfalfa extracted reported at 7¾c, 8¼c and 8½c per lb., with less-than-carlot sales up to 10c per lb. Beekeepers have sold to local dealers as low as 6⅔-7c per lb. Small lot sales No. 1 comb reported around $3.75-4.50 per case, few reported lower. Beeswax sales reported at 20c per lb. cash, 23-25c in trade.

PACIFIC NORTHWEST.—Extracting is well along. Flow from fireweed has been exceptionally good. Less loss than usual from spray poisoning and weevils in some sections. Bees going into winter in excellent shape. Large lot sales of white honey in 60-lb. cans have recently been made at 9-10c per lb., and in single-can lots at 11c. Few sales fancy and No. 1 white comb reported at $4.00-4.50 per 24-section case.

TEXAS POINTS.—Little change in record-breaking drouthy conditions except where local showers have given partial relief. Fair to normal surplus promised for the cotton area, but in mesquite and chaparral country hardly one-third crop secured, and many beekeepers have scarcely enough honey to winter on. Demand poor, even considering the small crop. White extracted in 60-lb. cans quoted at 7½-8½c per lb., with white chunk, in 6/10s, listed at 12½-13½c per lb.

EAST CENTRAL AND NORTH CENTRAL STATES.—Crop very spotted. Recent showers have improved condition of nectar-bearing plants in some sections, and a good fall flow from goldenrod and asters, with light smartweed flow, is expected in low areas and along river bottoms. The hot, dry weather in many sections has injured clover prospects for 1923. Demand has been light, due partly to abundance of fruit and to strikes. White extracted, including clover, raspberry and basswood, selling in carlots at 10c per lb., and in less-than-carlot quantities at 10½-12c per lb., with single 60-lb. cans up to 15c. White comb, in 24-section cases, ranges $4.00-4.80 per case.

PLAINS AREA.—In spite of drouth, reports indicate a larger than average yield in all states. Late rains make a late fall flow but prospects are for light fall yield. Recent less-than-carlot sales of white extracted in 60-lb. cans reported at 10-12c per lb., with few sales reported low as 9c per lb., and one carlot sale of water white clover at 9½c per lb.

NORTHEASTERN STATES.—Recent drouth has curtailed crop in eastern New York and Pennsylvania, but buckwheat flow reported fairly large in western portion of area. More rain needed if fall flow from aster and goldenrod is to be important. Comb crop especially light. Few sales white clover in 60-lb. cans at 10-12½c per lb., with buckwheat around 6½-8c per lb. White comb ranges $4.25-5.25 per 24-section case.

WEST INDIES: PORTO RICO.—Heavy rains are damaging to blossoms in the hill districts. Crop yield little better than last year, but still poor. Amber in 50-gal. bbls. listed at 3½c per lb.

CUBA.—Heavy shipments reported to Holland at 60c per gal., including cost and freight. Local beekeepers receiving 4¼c per lb. for extracted and 21c per lb. for beeswax.

SOUTHEASTERN STATES.—Fall flow now on and promises well from velvet beans, ''Mexican clover,'' heartsease and bitterweed. In the overflow area of Louisiana, unusually large acreages were planted to cowpeas, which are now furnishing nectar. Record-breaking frequency of summer rains in some sections. White extracted in 60-lb. cans and 34-gal. bbls. generally selling at 10c per lb., some low as 9c, light amber 8c, amber 6c. White heavy comb ranges $4.50-5.00 per 24-section case, with No. 1 light $4.00. Few sales chunk honey reported at 12½c per lb. Beeswax ranges 22-25c per lb. for yellow and 18-20c for dark.

Telegraphic Reports from Important Markets.

BOSTON.—Comb: Very little demand. Sales to retailers, New York, very few sales, new crop 24-section cases white clover $6.00-6.50, mostly $6.00. carton stock $6.50-7.00. Extracted: Market quiet but steady. Porto Rico honey is slightly higher. Sales to confectioners and bottlers, Porto Rico amber 88-94c per gal. California, white orange and white sage 14-16c, light amber sage 12-14c per lb.

CHICAGO.—Demand and movement moderate, market steady. Slight improvement noted in demand, particularly in extracted. Sales to retailers, comb: 24-section cases Colorado, Iowa and Wisconsin, clover and mixed clover and alfalfa No. 1, heavy $4.00-4.25. No. 1 light weight $3.00-3.50; No. 2 heavy $3.00-3.50. Extracted: Sales to bottlers, bakers and confectionery manufacturers, per lb.. Colorado and Utah, alfalfa and mixed alfalfa and clovers, white 9½-10½c, light amber 8-8½c. California, white mixed mountain flowers, 9½-10c. Wisconsin and Michigan white clover 10-10½c. few sales 11c. Beeswax: Receipts moderate. Market steady. Sales to wholesale druggists and laundry supply houses, California and Colorado, light 30-32c, dark 27-30c. South America, principally Brazil, light 27-30c, dark 20-23c.

KANSAS CITY.—Supplies moderate. Demand and movement moderate, market dull on comb, steady on extracted. Sales to jobbers: Extracted, Colorado, white alfalfa, 12c per lb. Comb: 24-sections Colorado alfalfa, light weight No. 1 new stock $4.25-4.75. Missouri, 24-section cases heavy white clover No. 1 new crop $5.00-5.50.

MINNEAPOLIS.—Demand light, movement improving, market unsettled, wide range in prices. Sales to retailers. Extracted: Per lb., California, white orange and Colorado white alfalfa and sweet clover, movement light 11-12½c per lb. New crop Hawaii, white, movement moderate, 10c per lb. Minnesota, white clover and Wisconsin basswood 12c. Comb: Colorado, 24-section cases No. 1 white $4.50. Minnesota, demand and movement improving; 24-section cases No. 1 white $5.25-5.50, few $6.00.

NEW YORK.—Domestic receipts limited, foreign receipts moderate. Supply limited. Demand and movement limited, market rather dull. Extracted: Spot sales to jobbers, wholesalers, confectioners, bakers and bottlers, domestic, per lb. California, light amber alfalfa 7-8c, white sage 9½-10½, white orange, mostly 11-11½, few 12c. Intermountain section, white sweet clover 9½-10c, South American and West Indies refined 65-75c per gal. Beeswax: Foreign receipts moderate. Supplies liberal. Demand limited, movement light, market dull. Spot sales to wholesalers, manufacturers and drug trade, Chili, light 28-30c; Brazil, light 26-27c.; Cuba, light 24-27c, few high as 28c; dark 19-20c; West Indies, dark 18-20c; Africa, dark 20-21c.

PHILADELPHIA.—Supplies sufficient to supply trade, but demand generally good with market stronger. Extracted: Sales to bakers and manufacturers, Mexico, light amber various flavors, 81c per gal. Porto Rico, amber, various flavors, 83c per gal. Beeswax: Practically no arrivals since last report. Demand and movement moderate, market steady. Sales to manufacturers, per lb., Chili, light 30-32c; Brazil, light 28-30c; Africa, dark 24-25c.

ST. LOUIS.—No carlot receipts reported since last report. Demand and movement very slow, market dull. Comb: Sales to wholesalers and jobbers, 24-section cases Colorado No. 1 white clover $6.00. Extracted: Sales to wholesalers and jobbers, California, light amber, 8c per lb.; Southern, light amber, various flavors, 6-7c per lb. Beeswax: No receipts reported since last report. No change in market. Demand and movement very light. Ungraded average country run wax nominally 25c per lb. to jobbers.

H. C. TAYLOR,
Chief of Bureau of Markets.

(Continued on page 680.)

The Opinions of Honey Producers Themselves as Reported to Gleanings in Bee Culture.

Early in September we sent to actual honey producers the following questions:

1. What is the average yield per colony, corrected to date, this season in your locality? Give answer in pounds. (a) Extracted honey? (b) Comb honey?
2. What is the condition of the colonies compared with normal as to (a) Number and age of bees? (b) Stores for winter? Give answer in per cent.
3. What is the condition of the honey plants for next season as compared with normal? Give answer in per cent.
4. What prices are producers being offered for honey at their stations in large lots (carload or entire crop)? (a) Extracted honey, per pound? (b) Comb honey, fancy and No. 1 per case?
5. What are prices to grocers in small lots? (a) Extracted honey in 5-lb. pails or other retail packages? (b) Comb honey, fancy or No. 1 per case?
6. How is honey moving on the market in your locality? Give answer in one word, as slow, fair or rapid.

The answers as returned by our honey and bee reporters are as follows:

State.	Reported by:	Yield. Ext.	Yield. Comb.	Colony Cond. Bees.	Colony Cond. Stores.	Plant Cond.	Price to Prod. Ext.	Price to Prod. Comb.	Price to Grocer. Ext.	Price to Grocer. Comb.	Movement.
Ala.	J. C. Dickman	25	0	100	100	100			$0.75		Fair
Cal.	L. L. Andrew	60		100	100	100	$.08		.85		Fair
Cal.	M. C. Richter	25		80	80		.06		1.50		Fair
Cal.	M. A. Saylor	30	24	100	100	100			.75	$5.00	Fair
Cal.	M. H. Mendleson	50		100	100	100				5.50	Slow
Colo.	J. A. Green	60	30	100	75			3.75	.60	4.25	
Colo.	B. W. Hopper	50	50	100	100	75			.50	4.50	Slow
Conn.	A. Latham	75	60	125	95	125					Fair
Conn.	A. W. Yates	10	10	75	25	125	.12	6.00	1.30	7.50	Slow
Fla.	W. Lamkin	75		100	100	100	.07		.65		Slow
Fla.	C. C. Cook	100		125	125	100	.08		.75		Rapid
Fla.	H. Hewitt	60		100	100	100	.08		.60		Fair
Ga.	J. J. Wilder	60	40	100		100	.10	4.25	.75	4.75	Fair
Ill.	C. F. Bender		46	90	100	70				5.50	Slow
Ill.	A. L. Kildow	110	90	100	100	25			1.10	4.50	Slow
Ind.	E. S. Miller	75	50	100	90				.80	4.80	Slow
Ind.	J. Smith	30	20	100	100	75			1.25		
Ind.	T. C. Johnson	75	60	100	100	100			.90	5.00	Slow
Ia.	E. G. Brown	100				100	.08		.75	4.75	Fair
Ia.	F. Coverdale	100	50	125	100	100		5.00	.75		
Ia.	W. S. Pangburn	120				90			.80	5.50	Slow
Kan.	C. D. Mize	60	50	80	60				.75	5.50	Slow
La.	E. C. Davis	80	50	100	100	100			.75	5.25	Fair
Me.	O. B. Griffin		12	95	85	95			1.25	7.00	
Md.	S. G. Crocker, Jr.	30	25	80		90			1.00	5.50	Slow
Mass.	O. M. Smith	25	0	100	50	100			1.00		Slow
Mich.	I. D. Bartlett	75		100	90	90	.10		.75		Slow
Mich.	L. S. Griggs	80	40	100	30	100			.80	6.00	Slow
Mich.	B. F. Kindig	50		105		80	.11		.75	5.25	
Mich.	F. Markham	80	50	100	75	50	.11	5.00	.80	5.50	Fair
Mich.	E. D. Townsend	50	0	100		85					Slow
Mo.	J. H. Fisbeck	95		100	50						Slow
Mo.	J. W. Romberger	90	80	100	80	60	.15	5.25	.95	5.50	Slow
Nev.	E. G. Norton	60					.06		.50		Slow
R. I.	A. C. Miller	50	0	100	85	100			1.50		Slow
N. Y.	G. B. Howe	40	10	100		50	.12	6.60	1.00		Fair
N. Y.	F. W. Lesser	40	20	100	100	125			.75	4.80	Slow
N. Y.	R. B. Willson	75	60	100	100	110	.11	4.75	.85	5.25	Slow
N. C.	W. J. Martin	75	60	90		100	.10	5.25	1.50	6.00	Fair
N. C.	C. S. Bumgarner			100	100	90			.70		Fair
N. C.	C. L. Sams	65	50	100	100	100	.10	5.00	1.00	6.50	Fair
Ohio.	E. G. Baldwin	90	50	100	100	100			1.25	5.50	Fair
Ohio.	R. D. Hiatt	70	30	95	65	100			1.00	5.50	Slow
Ohio.	F. Leininger	80	50	100	75	90	.11	4.80	1.00		
Ohio.	J. F. Moore	70	50	90	70	90			.80	4.80	Slow
Okla.	J. Heueisen	40		90	100	100			.75		Fair
Okla.	C. F. Stiles	30	10	80	85	50			.80	6.00	Slow
Ore.	E. J. Ladd	100		100	90	100					Slow
Ore.	H. A. Scullen	60				100			.90		Fair
Pa.	H. Beaver	80	40	100	80	50	.09	3.00	.65	3.25	Fair
Pa.	D. C. Gilham	40	32	100					1.05	7.20	Slow
Pa.	G. H. Rea	30	20	100	75	100					
S. C.	A. S. Conradi		50	100		100					Rapid
Tenn.	J. M. Buchanan	30	15	100	75	90			1.00		Slow
Tex.	T. A. Bowden	15		100	100				.75		Fair
Tex.	J. N. Mayes	76	30	60	75	60	.08	7.20	.50		Slow
Vt.	J. E. Crane	75	60	100	100	110			1.25	6.50	Slow
Wash.	G. W. B. Saxton	95		100	100	100	.10		.60		Slow
Wash.	W. L. Cox	130		90	95	100			.90	5.50	Fair
Wash.	G. W. York	75	40	90	80	90	.07	1.00	.65		Slow
W. Va.	T. K. Massie	10	30	100	80	100			1.00	6.00	Fair
Va.	T. C. Asher	15	12	90	60	100		6.00	1.10	6.00	Slow
Wis.	N. E. France	75	50			70			.65	5.75	Fair
Wis.	E. Hassinger, Jr.	65		100	100	100	.12		.85		Fair
Wis.	H. F. Wilson	75	50	100	75	100	.12	5.50	.90	7.00	Fair

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Woodman's Inner Overcoat Hives

BEE CAUSE:

1. **Protected Bees work day and night.** It has been shown by careful observation that maintaining a temperature of 98 degrees permits comb-building to go on **both day and night.** The bees will thus devote more daylight time to gathering honey.
2. **Larger Honey Crops are assured.** The bees are enabled to rear brood earlier in the spring, with no danger of chilled brood on account of cold snaps. One bee in March is worth one hundred in July.
3. **You will practically eliminate winter losses.** With your colonies in normal condition (that is, with plenty of good stores, a young queen and young bees) you will be able to winter practically 100%.
4. **The Inner Overcoat Hive will last a lifetime,** as the outer hive walls are the same thickness as in the single-wall hive. In other words, WOODMAN Inner Overcoat Hives are a lifetime investment—not an expense.
5. **Out of-door Wintered Bees have many advantages over cellar-wintered bees.** They do not spring-dwindle and are stronger at the opening of honey flow.
6. **Insures Close-up protection.** A person may have any amount of blankets fastened up to the wall of his room and still freeze to death if left in the center of the room without **close-up protection or insulation.** The **close-up protection in the Inner Overcoat Hive is what does the trick.**

5 one-story regular depth hives, $25.00: Jumbo depth, $27.50

Special circular on WOODMAN'S Protection Inner Overcoat Hive, showing 10 large illustrations, sent on request.

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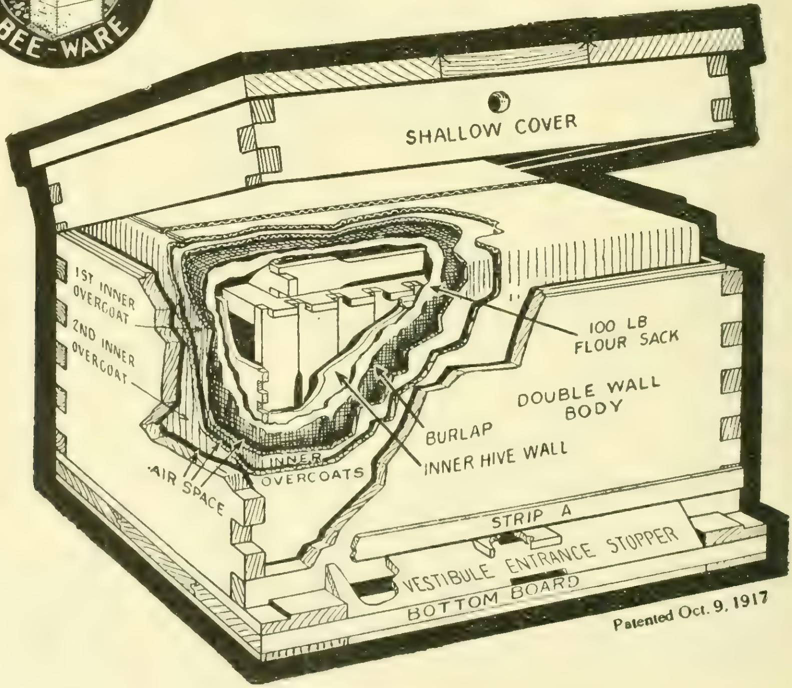
A. G. WOODMAN COMPANY, *Sole Makers*
238 Scribner Ave., N. W., Grand Rapids, Mich.


SHALLOW COVER
1ST INNER OVERCOAT
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BURLAP
INNER HIVE WALL
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AIR SPACE
STRIP A
VESTIBULE ENTRANCE STOPPER
BOTTOM BOARD
Patented Oct. 9, 1917

A SUPERIOR QUALITY
AT LESS COST.

Supplies

A SUPERIOR QUALITY
AT LESS COST.

(MADE BY THE DIAMOND MATCH COMPANY)

The Diamond Match Co., who manufacture our supplies, are the largest manufacturers in the world who make bee supplies. They own their own timber lands, mills and factories. We pass on the full advantage of the resulting low production cost to the Beekeeper.

One-Story Complete Dovetailed Hive

With metal telescope cover, inner cover, reversible bottom, Hoffman frames, nails, rabbets.

Standard Size.

Crate of five, K. D., 8-frame	$12.65
Crate of five, K. D., 10-frame	13.25

Jumbo Size.

Crate of five, K. D., 10-frame	14.25

Hive-Bodies

With Hoffman frames, nails, rabbets.

Standard size, crate of 5, K. D., 8-fr.	$5.20
Standard size, crate of 5, K. D., 10-fr.	5.85
Jumbo size, crate of 5, K. D., 10-fr.	6.85

Hoffman Frames

Standard size	100, $5.20	500, $25.00
Shallow	100, 4.30	500, 21.00
Jumbo	100, 5.80	500, 28.00

Diamond Brand Foundation

SPECIAL PRICES!		SPECIAL PRICES!
Medium	5 lbs., 65c lb.	50 lbs., 60c lb.
Thin Super	5 lbs., 70c lb.	50 lbs., 65c lb.

Comb Honey Supers

For 4x5x1⅜ sections including section-holders, fence-separators, springs, tins and nails.

Crate of five, K. D., 8-frame	$5.60
Crate of five, K. D., 10-frame	6.00

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We Want Beeswax

The tremendous demand for **Dadant's Foundation** requires that we have a large stock of beeswax on hand and in transit at all times.
We are therefore situated so that we can pay the highest prices, both in cash and in exchange for bee supplies.

Write us stating quantity and quality of beeswax you have to offer and we will give you our very best prices either f. o. b. Hamilton or your shipping point together with shipping tags and instructions.

When ordering your stock of bee supplies for your season's use, be sure to stipulate

DADANT'S
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Every inch, every pound, every ton, equal to any sample we ever sent out. You cannot afford not to use DADANT'S FOUNDATION.

We render combs into beeswax.

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We buy beeswax for highest cash and trade prices.

We sell a full line of best bee supplies.

PRICES AND CATALOG FOR THE ASKING.

Dadant & Sons, Hamilton, Illinois.

EDITORIAL

To Prevent Crystallization of Sugar Syrup.

WE had hoped to be able to publish in this issue a further report on the experiments conducted by the Bureau of Chemistry on making sugar syrup that will not crystallize, by controlling the degree of inversion, in order that it could be tried out this season. A recent letter from H. S. Paine, chemist in charge of the Carbohydrate Laboratory, Bureau of Chemistry, explains that their experiments have been delayed on account of pressure of other work; and our own experiments here at Medina are not yet far enough along to draw conclusions as to the degree of inversion best suited for winter feeding.

Some beekeepers report that they have no trouble from sugar syrup crystallizing in the combs when fed for winter. They simply heat the water to the boiling point and then pour in twice its volume of sugar, stirring, as the sugar is poured in, to prevent it from piling up on the bottom of the vessel. When the sugar crystals are all dissolved the process of making the syrup is complete without further application of heat and without the addition of acid. Others using the same formula report that the syrup begins to crystallize often before the bees can take it from the feeders.

Those who are troubled with crystallization can remedy the trouble by adding a level teaspoonful of tartaric acid for about every 15 pounds of sugar and boiling the syrup for 10 or 15 minutes after adding the acid. This should modify the syrup sufficiently to prevent early crystallization.

* * *

The Isle of Wight Disease Bill.

HOUSE BILL 11396, to regulate the importation of honeybees into the United States, was passed by the Senate on August 23, 1922, and no doubt will have been signed by the President by the time this is in print if not before. This bill had previously been passed by the House of Representatives, as was noted in our July issue. The House bill was passed by the Senate without amendment; but the original bill as published on page 367, June issue, was amended by the House committee to read as follows:

> Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That, in order to prevent the introduction and spread of diseases dangerous to the adult honey bee, the importation into the United States of the honeybee (Apis mellifica) in its adult stage is hereby prohibited, and all adult honeybees offered for import into the United States shall be destroyed if not immediately exported: Provided, That such adult honeybees may be imported into the United States for experimental or scientific purposes by the United States Department of Agriculture: And provided further, That such adult honeybees may be imported into the United States from countries in which the Secretary of Agriculture shall determine that no diseases dangerous to adult honeybees exist, under rules and regulations prescribed by the Secretary of Agriculture.
>
> Sec. 2. That any person who shall violate any of the provisions of this act shall be deemed guilty of a misdemeanor and shall, upon conviction thereof, be punished by a fine not exceeding $500 or by imprisonment not exceeding one year, or both such fine and imprisonment, in the discretion of the court.

The Secretary of Agriculture will no doubt later make arrangements, according to the provisions in this bill, for the importation of queens from certain countries in which he has determined that the Isle of Wight disease does not exist.

* * *

Honey Market Conditions.

While the movement of honey on the market has been distressingly slow thus far this season, there are now indications of an improvement. With improved industrial conditions and the fruit and vegetable season drawing to a close, honey should now begin to move freely again. Beekeepers who supply their local markets should see that their markets are kept supplied and should not reduce their selling effort as their supply of honey diminishes, but should purchase honey from others to keep their customers well supplied at all times. Beekeepers who have a talent for selling make the best possible salesmen for honey.

* * *

Fall Honey for Winter Stores.

CONFLICTING reports as to the wholesomeness of fall-gathered honey as a winter food for bees in the North is explained in part, by the character of the honey flow when the honey was stored. It is well known that, during a rapid honey flow, honey from the same plant is lighter in color than during a slow honey flow. This is true even in the case of white honey, such as that from white clover, sweet clover and alfalfa. While most fall flowers yield amber or dark honey, it is surprising how much lighter fall honey is when the honey flow is rapid.

As a rule, lighter-colored honey is better for winter than darker-colored honey from the same source, presumably because it contains less indigestible matter.

Another factor that intensifies this difference is that during a slow honey flow there is a greater possibility of the honey being from mixed sources, which often reresults in inferior winter stores.

Of course where the bees can have a cleansing flight every week or two during the winter, the quality of the winter stores makes but little if any difference in the way the bees winter; but, in the extreme northern portion of the United States and in Canada, successful wintering hinges largely upon having perfect winter stores. For this reason many northern beekeepers feed each colony at least 15 pounds of sugar syrup in October, regardless of how much honey is already in the hive.

* * *

Department of Agriculture Wants Statistics on Bees and Honey.

AS our readers already know, the statistics on bees and honey production, gathered by the United States Census, are incomplete, since the farm schedule asked each farmer for the number of bees on his farm, and the special town schedule did not include questions on bees and honey. Many of the out-apiaries kept on small rented tracts in out-of-the way places were missed because the owners live in towns or cities. Probably most of the bees in towns were missed by the enumerators, because the town schedule did not mention bees or honey. The Census provision that ''any tract of land containing less than three acres and which produced at least 250 dollars' worth of farm products in the year 1919, or required for its agricultural operations the continuous services of at least one person shall be reported as a farm'' may have resulted in the listing of some town apiaries as well as some out-apiaries whose owners live in town. It is apparent that the proportion of colonies of bees listed by the enumerators must vary for different parts of the country according to whether the population is largely rural or urban, and also according to the degree of specialization in beekeeping in the locality. It would, therefore, be difficult to make an estimate of the actual number of colonies and production of honey from the Census figures alone.

The Crop Reporting Division of the Department of Agriculture is now collecting figures to determine the proportion of bees and honey production recorded by the census enumerators for various parts of the country, in order to obtain figures on the actual production of honey and the number of colonies in this country. Our readers can assist the Department of Agriculture in obtaining these figures, as explained in the following letter:

Gleanings in Bee Culture, Medina, Ohio.

Gentlemen:—Enclosed you will find a copy of a special inquiry being sent out by this Bureau, which will be self-explanatory. In undertaking this inquiry, it is hoped to get the consensus of opinion of the best-informed producers and all elements of the trade who may be able to furnish information. The inquiry is going to the regular lists of this Bureau but we should be pleased if you might find it possible to publish it, with an invitation to those of your readers who are not regularly reporting to the Bureau, to give their opinion of a portion or all of a county or larger area and to furnish any special information bearing on the problem. Answers numbered to correspond with the questions asked is all that will be necessary. The questions need not be repeated. Reports may be addressed simply to the Crop Reporting Division, Department of Agriculture, Washington, D. C.

We shall appreciate any information you yourself may be able to give us.

We are making this request of all of the bee journals.

Very truly yours,
LEON M. ESTABROOK,
Associate Chief of Bureau, in Charge Division of
Crop and Live Stock Estimates.
Washington, D. C., July 31, 1922.

Following is the list of questions:

1. What per cent of all colonies of bees in your county in 1919 were kept in such manner that they would likely have been recorded by the Census enumerator? Ans......per cent.
2. What per cent of all colonies in your county in 1919 were held in town or kept by commercial beekeepers or others in such manner or place that they would likely not have been recorded by the Census enumerators? Ans......per cent.
3. What per cent of all honey produced in your county in 1919 would likely have been recorded by the Census enumerators? Ans......per cent.
4. What per cent of all honey produced in your county in 1919 would likely not have been recorded by the Census enumerator? Ans......per cent.
5. If you live in town, how many colonies of bees do you keep there or in out-apiaries? Ans........number.
6. If you live in the country, how many colonies do you keep? Ans........number.
7. Were your colonies recorded by the Census enumerator? Ans........
8. About how many pounds of honey do you produce in an average year? Ans........pounds.
9. What per cent of your honey is usually sold? Ans........per cent.

Here is an opportunity to help in securing dependable figures as to the magnitude of the beekeeping industry in this country. The more replies to these questions that are sent in, the more nearly accurate will the figures compiled from them be. We urge our readers to send in replies at once, addressing the letter to the Crop Reporting Division, Department of Agriculture, Washington, D. C.

* * *

An Automatic Feeder for Winter and Spring.

A NEW term is creeping into the bee literature of this country. Beekepers are now talking about the ''food chamber.'' Will the beehive of the future be made up of a brood-chamber, a food chamber, and the supers?

More and more beekeepers are learning the great value of leaving more stores in the hive than has formerly been practiced in this country. Some do this by feeding or by putting combs of honey from the extracting-super down into the brood-chamber, some by using a larger brood-chamber, and some by using a separate chamber for the food. This food chamber becomes a part of the brood-chamber during the spring brood-rearing period, but later it is filled with honey while located above a queen-excluder to insure sufficient stores for winter.

In some localities the problem of stores for winter and spring is taken care of by a fall honey flow, so that the brood-chamber is filled as brood-rearing wanes in the fall; but in many localities, when the extracting-supers are taken off at the close of the season, there is but little honey left for the bees, no matter how large the brood-chamber. When empty combs are given in the supers the bees are inclined to carry nearly all of the honey above, often leaving empty combs below. Even when by careful management the bees can be induced to store fall honey in the brood-chamber in sufficient amount for winter and spring, much of this fall-gathered honey is not safe for winter stores unless the bees are able to take a cleansing flight every three or four weeks during the winter. For this reason many northern beekeepers endeavor to induce the bees to store most of the late-gathered honey in the supers, and then feed heavy sugar syrup in October after there is no further chance for the bees to put in inferior stores gathered from the late flowers.

Where hundreds of colonies must be supplied with stores for winter and spring the labor involved is no small item, if the bees are to be wintered in single stories. Just now (the middle of September) there are thousands and thousands of colonies of bees occupying two stories, the upper one, or super, in many cases being fairly well filled with honey, but the lower one containing almost no honey. In many cases this super contains the remnant of the early-gathered honey which was left on the hive after the close of the early honey flow, because the beekeeper knew that to take it off would result in the colony starving or approaching the verge of starvation during late summer and fall. In other cases this super was filled with honey gathered from fall flowers. The problem which now confronts the beekeepers is whether to take off all these upper stories, extract the honey, and then feed his bees for winter; take out the queen-excluder and winter the bees in the two stories; or put most of the honey into the lower story, in order to be sure that the colony is supplied with sufficient stores for winter and spring. No wonder beekeepers are asking themselves the question whether it would not be better to leave this honey on the hive during the winter, provided it is fit stores for wintering if in the North. In California and other parts of the West wintering in two stories is coming to be almost the universal practice in large apiaries.

But why have a separate chamber for food? Why not have a brood-chamber large enough to hold the brood and an ample supply of stores at the same time, thus avoiding extra parts to the hive? This can be done to a certain extent in comb-honey production, and can also be done in localities having a dependable fall honey flow in extracted-honey production. The trouble with this plan for extracted-honey production for most localities is that even the largest brood-chambers are not well stocked with honey at the close of the early honey flow. If there is no fall honey flow, colonies in such hives must either be fed or combs of honey must be put down from the supers if they are to be wintered in a single story. To make sure of having combs well filled with honey for winter when producing extracted honey, it is necessary in many localities to have them filled as supers, preferably above a queen-excluder.

The shallow extracting-super when used as a food chamber can be filled with early-gathered honey and left on the hive among the supers through the season; then, when the supers are all taken off, this food chamber, filled with the best early-gathered honey, is put into place immediately on top of the brood-chamber. In this way the colonies can be supplied with wholesome winter stores with almost no extra labor. In the spring when the first super is given, it is often an advantage to raise up the rim of honey in this food chamber in order to put the supers between the brood and the honey.

Some beekeepers paint this food chamber a different color to remind them that it must not be taken away when extracting. Some use a shallow extracting-super for the food chamber, while others use a regular standard hive-body for this purpose. An objection to wintering out of doors in a story-and-a-half or a two-story hive is the extra space for the bees to keep warm. But actual tests have proven that well-protected colonies winter well this way and do not need attention until late in the spring, being well provided with both stores and room. There is no doubt a limit as to how far north this plan of wintering can be used successfully, but it is now being used by some extensive honey producers as far north as Michigan and Ontario. Perhaps the ability of the cluster to expand and contract laterally in the space between the two sets of combs is an advantage sufficient at least partially to overcome the disadvantage of having more room to keep warm.

For many localities, probably for most localities, the separate food chamber is a great labor-saver. If we must sell our honey for 10 cents per pound or less, it is imperative that all short cuts possible be taken in its production. Such a food chamber becomes an automatic feeder that feeds the bees whenever they need feeding, even though the beekeeper is a thousand miles away. It becomes especially valuable as an automatic feeder in the spring, for colonies that are thus supplied with an abundance of stores are usually so much stronger in the spring than colonies not so well supplied that the automatic feeder is refilled free of charge most seasons, because such colonies often gain in stores during unsettled weather in the spring while weaker colonies are losing in stores.

BOTTLING AND SELLING HONEY

Some Tricks of the Trade Not Generally Known to the Beekeeping Public

By E. R. Root

Before the Great War, and to a much greater extent during its continuance, American honey was going to Europe by the shipload. The high price secured during the war times enormously stimulated the production of honey; and even after the armistice was signed, and sugar had begun to take a tumble, and along with it honey; that enormous production of honey kept on just the same, notwithstanding that vast quantities which had been going to Europe stopped suddenly. It was evident that something had to be done to stimulate the consumption of honey in the United States, or else the prices of it would sink to a level never before reached. Our Gleanings staff called a council, and the result was that, notwithstanding we were bottling and selling honey, we came to the conclusion that the beekeeper himself, in view of the situation of no honey going to Europe and the large markets glutted, would have to sell more of his honey in his own locality. As is well known, we then began to publish a series of articles advocating local selling as well as roadside selling. The result of that campaign has been to convince many beekeepers that they could not only produce but dispose of their product almost at their own doors.

It is not my purpose at this time to take up the question of roadside selling, but to explain some tricks in packing honey, that have never before been given to the public. But before I do this—that is, tell how to fill the packages, whether tin or glass—I ought to say that selling honey in tin pails of 5 and 10 pound size has been enormously stimulated within the last two years. Immense quantities of extracted honey have been sold in tin and in jars right in the locality where it has been produced without its having ever once entered a freight or express car. Obviously it is better to encourage selling in 5 and 10 pound pails rather than in half-pound or one or two pound bottles. It is almost as easy to sell twice the quantities in tin as it is in glass. Right here you may say, ''Why sell in glass at all?'' In the great majority of cases honey in bottles is the forerunner of honey in the tin pail. It is necessary, therefore, for the local seller to know how to put up his honey in glass in order to develop a taste and demand for extracted honey in tin later on. In the large industrial centers, and especially among the working people, it is almost impossible to sell a larger than a half-pound tumbler or a one-pound bottle of honey. Many buy only a little of this and a little of that; and you may say what you please about the advantage of selling in tin and the advantage of selling a large package instead of a small one, people of the poorer class can not and will not buy honey at all unless it is in a package costing not over 15 or 25 cents. While the customer will buy granulated honey in a tin pail he will not buy what looks like lard in a glass bottle. Obviously the combination will not sell.

Now, then, we are ready to consider putting honey in the bottles so it will remain liquid for two years and without any froth or bubbles on top.

Heating Honey for Bottling.

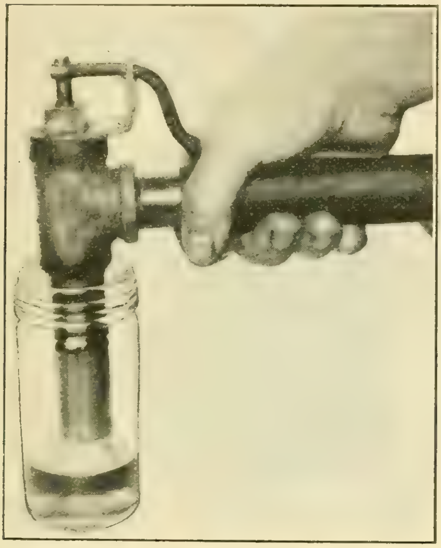
In heating honey there is always danger of injuring its delicate flavor. Honey for bottling purposes should be light-colored and always good for table use. Dark or poorly flavored honey should be put up in tins or sold to the baker. It can not be emphasized too strongly that the beautiful light honeys for bottling can be very easily injured (1) by heating too long; (2) by raising the temperature too high; (3) by heating it too many times. Usually it is necessary to liquefy in 60-pound square tin cans all honey suitable for bottling. The usual plan is to stand the tin can right side up in a boiler of hot water. But the trouble with this plan is that it holds the portion that has been reduced to a liquid in a heated condition, while the other portion and the core are still unmelted. A far better plan is to place the square cans in a small hot room having a temperature of 125 to 150 degrees, and to have these cans, while in the hot room, placed upside down with the caps off so that the honey may drain away as fast as it melts, thus being carried away from the heat. It is then ready to be placed in a water-jacketed vessel and heated further until the proper temperature for bottling is reached. At no time should the honey itself be subjected to a temperature higher than 160 degrees. It should then be run into bottles and sealed while hot.

Some beekeepers have told me that after they poured the honey into bottles the bubbles or froth would form on top, and that they had allowed the jars to stand unsealed until this froth had disappeared, after which they put on the caps. This is all wrong. If the honey is allowed to cool and is then sealed it may granulate in six months, while if sealed at once it will remain liquid for two years, provided in the mean time it is not subjected to extremes of temperature or kept in a refrigerator or in a cold storage room.

How to Fill a Bottle Without Scum on Top of the Honey.

There is a little trick about filling a bottle with honey so there will be no froth or scum on top, after which the bottle may be sealed immediately.

There is a filling device known as a gooseneck for filling bottles with honey that will leave no froth. It is a sort of honey-gate with a long snout, the other end of which connects with one end of a piece of rubber hose that leads from a tank of hot honey. The neck or snout should be long enough to reach down to the bottom of the deepest bottle used. The bottles, after washing or cleaning, are placed in a tray holding one or two dozen bottles at a time. This tray is then put within reach of this rubber hose, on the end of which is the gooseneck. To fill, the snout of the implement is placed near the bottom of the first bottle, when the hand lever opening the device allows the honey to escape from the end of the snout. As the honey passes out, the snout, or gooseneck, is slowly lifted by the hand, always keeping it within half an inch of the surface of the honey as it rises. As soon as the honey reaches the desired point in the neck on the bottle the lever closes the valve, when the operation is repeated with the other bottles in the tray, each time care being taken to introduce the snout to the bottom of the bottle and raising it as the bottle fills. In this way the whole dozen or more bottles can be filled one at a time without moving or touching a bottle. The operator simply moves the gooseneck from bottle to bottle. In the old-fashioned way of filling a bottle from a honey-gate, the honey falls from above the neck of the bottle, the bottle moves and the gate remains stationary. With the gooseneck the bottle remains stationary and the stream of honey is supplied to each bottle. This saves handling of the bottles, which, of course, saves time. But the great feature of the gooseneck is not so much in the saving of time as it is in the elimination of white froth in the top of the bottle.



The gooseneck—a device for filling jars without forming air bubbles in the honey. The snout is placed down into the jar near the bottom, then raised as the jar is filled.

When a stream of honey six or eight inches long runs out from an ordinary honey-gate into a bottle, it gathers momentum as it falls and carries with it bubbles of air which, on rising to the top, form a scum or froth. When the gooseneck is used, the stream of honey is not more than half an inch long; and as it passes out from the end of the snout it does not carry any air bubbles, but neatly and nicely it fills the bottle in much less time than it takes to tell about it; and, best of all, it leaves no froth.

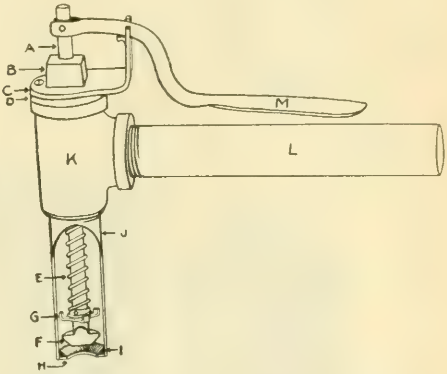


Diagram showing construction of the gooseneck filler. K, one-inch gas pipe T; J and L, two long one-inch nipples; B, plug screwed into upper part of T, forming a stuffing-box; M, lever; A, valve stem; C, fulcrum for lever; E, valve spring; G, radial arms; F, valve; H, washer, held in place by pins through nipple J; I, valve seat of soft metal.

For the present, at least, a good machinist can make one of these goosenecks from the illustration shown herewith by making use of a one-inch gaspipe T and two long one-inch nipples, one forming the snout and one at right angles to it forming the connection with the hose line attached to the tank containing the honey to be bottled. The opening in the bottom of the snout should be in the form of a poppet valve that is used in such a large way on automobiles nowadays. The bottom seat should be soldered in, and both parts of the valve should be ground to a fit. To make the valve seat properly so it will cut off the honey instantly, there should be little radial arms fastened on the valve stem that project out like the spokes of a wheel far enough to come in contact with the inside of the gaspipe. The projecting arms will guide the valve head into place. In the top opening of the gaspipe T there should be screwed a stuffing-box through which passes the valve stem. On the end of this stem should be attached a lever shown in the illustration, so that the valve can be opened and closed with one hand while filling the bottles.

It is a very slow job to bottle cold honey; and, besides the fact that it will granulate very soon, it will flow so slowly that it makes the expense of bottling too large. To make the honey flow freely it should be heated to 150—certainly not more than 160 degrees; and if bottled in the manner explained, and sealed immediately, it will remain liquid for two years if kept in a living-room temperature—ordinarily about 70 degrees Fahrenheit.

If the honey can be sold within six months, a temperature of 140 degrees will be much better than one of 150. The higher the temperature to which honey is heated, the more of the original aroma is dissipated.

Packing Honey in Tin Pails.

So far I have explained how to put up honey in glass. While a gooseneck is very handy for tin pails it is by no means essential. In fact, it is the general rule to fill the pails from the honey-gate. Neither is it necessary to heat the honey before putting it into pails. If the honey is to be shipped any distance the pails should be filled with cold honey, with the expectation that the honey will granulate soon.

In this connection it is only fair to say that honey just as it comes from the extractor has a quality about it—that is to say, a virgin aroma—that is very pleasing, that the same honey will not have after it has been heated. Heat dissipates some of the flavor unless one is very careful in applying it. As many people are learning to like granulated honey, and as it is better to ship honey in that form, it is unnecessary to heat the honey when pouring it into pails. But on every pail there should be printed directions stating that the honey will probably be in a solid or semi-solid condition; and that if it is desired to bring it back into the liquid condition this can be accomplished by allowing it to stand for a while in water not hotter than that in which the hand can be held.

In Canada, granulated honey is put up in pails. Consumers in that country have been educated to eat honey in that form.

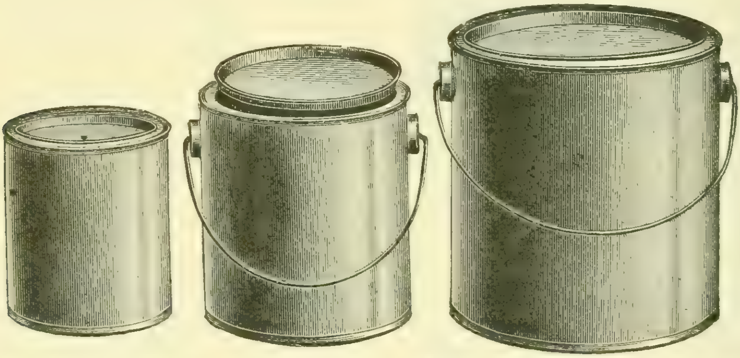
In the southern states a large part of the honey is put up in tin pails as "bulk honey." The combs are cut out of the frame in chunks of various sizes, put into pails, and then extracted honey is poured over the whole until the pail is full. In the southern states this kind of honey is all right, because in a warm climate honey does not granulate as it does here in the North. Granulated comb honey in the northern states will not sell, especially in the cities.

Importance of Attractive Labels.

In regard to labels, they must be neat and attractive. No local printing office—certainly no country printing office—knows how to get up an attractive label. The sale of bottled honey in glass may be almost killed because of a poorly printed label.

As a rule, labels on tin pails should go clear around and contain the directions for liquefying. But when it is desired to put a small label on tin it is best to use a special label paste, which may be procured of a bee-supply concern.

Those who are putting up honey in tin pails by the carload are using a lithographed pail, the colors being red and white. These pails are used very largely in Canada, and to some extent in the United States. The lithographed pails certainly have a neat and professional look, and are very pretty. Some pails have been made without a rim on the inside of the top so the pail can be used for domestic purposes when the honey is out. I am told that a good many of the factory workers in Canada use these honey pails in carrying their dinner when going to their work. As the word "Honey" is lithographed on the workman's pail, that some honey is advertised to all his fellow-workers and to every one on the street. Such advertising costs nothing and is effective.



Two and one half-pound friction-top can, five-pound pail and 10-pound pail. The five-pound pail especially is becoming a popular package for honey.

THE MARKETING PROBLEM

A National Honey Marketing Organization Needed to Bring About Better Distribution of Honey

By Geo. W. York

It seems to me, as I review the past many years of honey production in the United States, with which I am somewhat well acquainted, the greatest need of beekeepers today is a national organization that will keep in touch with all the leading wholesale honey markets, and direct the shipping of honey in carlots where they are most needed to supply the market. After giving the subject considerable thought I cannot conclude otherwise than that the leading commercial honey producers of this country should get together and form this kind of organization.

For a number of years I have thought that the production end of beekeeping has been rather overworked. Most wide-awake honey producers do not seem to lack the ability to harvest a good crop whenever the nectar is in the flowers. What really worries them most is to find a profitable market for their honey after it is boxed up ready for shipment.

I am just wondering if it would not be a wise move on the part of the United States Government, through its efficient Division of Apiculture, to "lay off" for a while on the effort to teach beekeepers how to produce more honey, and for a year or two endeavor to discover some ways in which the commercial beekeeper can dispose of his crops of honey to a profitable advantage to himself.

[This is already being done by the Bureau of Agricultural Economics, of the United States Department of Agriculture, through a careful study of the honey market and the Market News service on Honey. The apicultural division of the Bureau of Entomology could not take up the problem of marketing, since this is the function of another bureau.—Editor.]

Two Cars of Honey Sold Below Cost of Production.

The thing that has caused me to discuss the honey marketing question again is a private letter received from central California, and dated August 10, 1922, in which the writer reports that "two carloads of new alfalfa honey sold recently in San Francisco for 5¼ cents a pound—about half the cost of production." Is there any good reason why good table honey should sell at any such low price as that, when at the same time sugar is ascending in price? Surely, there is something wrong somewhere.

There is no use blinking the fact, the honey marketing problem is becoming a very serious one, and it would seem that, if something really effective is not done about it pretty soon, there will be no large crops of honey to worry about in the not very far distant future. Just why should any producers of honey accept only 5¼ cents a pound for good alfalfa extracted honey at the present time? Was it because the producer "needed the money?" If so, had there been a suitable marketing organization, then no doubt it could have arranged to loan the producer about 25 per cent of the value of the honey offered for sale, until such time as it might have been disposed of at perhaps nearly twice the figure per pound at which it was sold.

It may be, too, that if a really live marketing organization had been "on the job" at the time the two cars of honey were ready for delivery, the organization, being in touch with all the principal markets, possibly might have directed that the two cars be sent where they would have brought more than double the price for which they were sold.

Is This a Function of the League?

It is just possible that the American Honey Producers' League could include such a work in its plans. One of its present aims seems to be to develop a wider family and individual consumption of honey, which is all right and a very worthy object; but this should be followed up by an effort to see that there is a more even distribution of honey in the markets. It certainly is not good business to ship most of the honey crop to one or two cities like Chicago or New York, and let the rest of the large centers of population go without any honey. Such unwise practice tends to demoralize prices where too much honey is sent, and then those forced low prices are likely to be taken as the standard for the rest of the country.

It does seem that there ought to be enough clear-minded beekeepers in the United States to take hold of this problem of marketing and solve it in a manner that would result in a fair profit to the producers of honey, and yet be entirely just to the consumers. It may take a few sessions to induce all the large producers to unite, but I believe when the stubborn and unwise ones once see the advantage of the kind of co-operation suggested, they will be only too glad to come in with the rest.

I do not suppose that anything I might say will cause the formation of such a honey marketing organization as I have indicated, but it may possibly set some others to thinking who may evolve a plan of handling large individual crops of honey so that there shall result a substantial profit to the producer rather than even a very small loss. There must be the right kind of method of doing this very necessary work—the question is, Can enough commercial honey producers be induced to get together, and stay together long enough, to make a success of any plan that will eventually realize for the large producers an adequate price for their honey, so that they will feel encouraged to go forward and develop honey production along lines that will mean a real success, financially and in every other way, not only for the immediate future, but for many years to come, for all who desire to make a commercial success of beekeeping?

Is There an Overproduction of Honey?

After trying to view beekeeping and honey production from almost every conceivable angle for many years, I cannot avoid the feeling that there never yet has been a real surplus of good table honey produced in this country. And I don't believe a surplus will ever be produced, if a more even distribution is secured, and the present under-consumption overcome by a more universal demand for honey on the part of every family and individual among our population.

Take California as an example. It has been estimated that its annual honey crop is about ten million pounds. The 1920 census showed a population of about 3½ millions. Now, if all the honey produced in California were consumed within its borders, each person would get only 3 pounds, or about one ounce a week during the whole year!

Wouldn't it be possible for California to use all its own honey every year? And if that state could do so, why could not all the other states do likewise? But states like New York, Pennsylvania and Illinois would still have to import honey, for there is not enough produced in those states to give all their populations even a small taste once a month!

Statistics show that there is an average per capita consumption of nearly 100 pounds of sugar in the United States annually. Now, why couldn't five pounds of that 100 pounds of sugar be replaced with honey? And the result would be a healthier and happier people in general, besides creating such a demand for honey that every pound of all eatable varieties would be consumed at a fair price per pound, so that both producers and dealers would do a nice, clean, honest business.

Am I visionary, or could this dream of mine ever come true?

Spokane, Washington.

THE WINTERING PROBLEM

How the Uncertainties of Wintering Can be Eliminated. An Inexpensive Packing Case

By Geo. S. Demuth

MOST of the discussions on wintering in the books and journals deal almost entirely with winter protection—the protection afforded by a double-walled or packed hive, by windbreaks, or by placing the bees in a cellar or other repository where the temperature can be controlled. There seems to be an impression among many beekeepers that winter protection should solve the wintering problem, that the addition of packing about the hive or placing the bees within a cellar should enable any colony to live through the winter. With this conception of wintering if there is a winter loss, the winter protection is blamed for the loss and is therefore promptly condemned. To depend upon protection alone to bring the colonies through the winter in good condition is bound to result in disappointment in many cases. Too often the number of hives having bees in them are counted in the fall, and then again in the spring, the difference being considered the winter loss. Much of the so-called winter loss in this country is not winter loss at all, but is a loss brought about by some defect during the late summer and fall. The loss of colonies from some serious defect in the fall should not be charged to winter loss at all, for one can not lose that which he does not have. It would be asking entirely too much of winter protection to expect it to bring through the winter colonies that are not in a normal condition when winter begins.

Some look upon wintering as being extremely complicated, having in it many uncertain factors. In fact, the idea of luck is still a factor in wintering in the minds of many. But there are now scores of beekeepers in the United States and Canada who winter their bees successfully year after year with practically no loss and who feel as certain of their results in wintering as the stock man does of wintering his stock. In fact, there is a less degree of uncertainty in the wintering of bees than in the case of other live stock on the farm, when the bees are given a fair chance.

As I pointed out in these columns last October, as well as at beekeepers' meetings throughout the country during the past 10 years, there are but three factors essential to successful wintering. These are: (1) Strong colonies of vigorous bees in the fall, most of which are young; (2) an ample supply of food easily available for the cluster throughout the winter, and, in the North where the bees cannot fly every few days this winter food should be of the best quality; (3) protection that is adequate for the most severe winter than may come in the particular location. These factors are all within the control of the beekeeper, so the element of chance can be entirely eliminated.

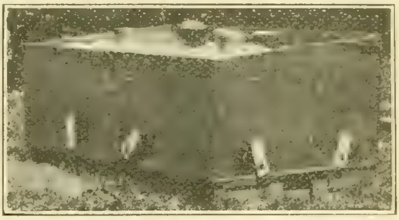
The degree to which the first of these factors is present has already been determined. This is why beekeepers nowadays talk about beginning their preparations for winter in late July or August, in seeing that the bees have a good queen, preferably young, as well as sufficient food to rear enough bees to make the winter colony. If brood-rearing is kept up during the six or eight weeks just preceding the time it is naturally suspended for winter, the first of these three factors essential to successful wintering is taken care of. The condition of the colony, both as to the number of bees and the age of bees throughout most of the country, is very good this fall on account of an unusual amount of brood-rearing during August and September. (See the reports from producers on our market page in this issue.) To winter well the colonies need not be overly strong, but they must not be weak in either numbers or in the vitality of the bees. At the present time there should be at least three pounds of young bees in each colony in addition to the older ones. These young bees are the ones that may be expected to be on the job next spring, still young if they have wintered well. This is about the number of bees which experience has shown to be necessary in the spring at the beginning of the building-up period in order to be ready in time for the honey flow.

If any of the bees have swarmed during the season, the parent colony having the young queen may have more than this amount of young bees. The same thing is true with colonies that were requeened late in July or early in August. Where there was a honey flow during August and September most colonies should have more than three pounds of young bees at the present time. But where brood-rearing has not been kept up sufficiently to insure at least three pounds of young bees at this time, about the only thing that can be done is to unite until they are strong enough, even though the number of colonies after uniting is only one-half or less than the number before uniting.

Quantity and Quality of Winter Stores.

Beekeepers are learning that it does not pay to economize on the amount of stores for winter. While the bees may not consume more than 10 or 15 pounds of stores during the actual broodless period, for some reason they winter much better when their hive is fairly crowded with stores. As a rule, colonies which have 30 to 50 pounds of stores winter better than those having but 20 pounds. Not only do they winter better, but the great abundance of stores in the hive in the spring after brood-rearing begins is absolutely necessary if the colonies are to build up promptly in the spring.

In the North where the bees are confined to their hive for a long period during the winter, the stores used during confinement must be of the best quality. Unfortunately, it often happens that the bees are compelled to use for their winter food the very poorest honey which they gather during the season. The best honey for winter stores is usually that which is gathered during the midst of the main honey flow of the season. This honey is usually stored in the supers and taken away by the beekeeper. If any of this early-gathered honey is stored in the brood-combs it is usually in the upper corners of the frames. The bees, in shaping their affairs for winter, store the later-gathered honey below the early-gathered honey. This is used first during the winter, and unless this later-gathered honey is of good quality the colony is no better off than if all of its stores were poor honey, for the early-gathered honey in the upper corners of the frame will probably not be reached until spring.



Winter packing case for eight colonies. Note feeder pails in position and buttons for reducing entrances.

Honey from white clover, alsike clover, buckwheat if not mixed with honey from other fall flowers, and alfalfa if not granulated, is good for winter stores. Any of these are better if gathered during a rapid honey flow. The great trouble with natural stores in the far north is the danger of inferior honey being mixed with the better honey or inferior honey being gathered so late that it is used first in winter.

In the far north where bees are wintered in the cellar or where outdoor-wintered colonies are confined to their hives for more than a month at a time without a cleansing flight, one way to insure perfect wintering year after year, so far as the stores' factor is concerned, is to feed a thick sugar syrup made of granulated sugar two parts and water one part. Some prefer granulated sugar two and one-half parts to one part of water. This thick syrup should be fed after brood-rearing has ceased and after the flowers are gone, so that the bees will not store more honey after the feeding has been completed.

Another way is to save some of the early-gathered honey to be placed where the bees will use it during winter. Some provide each colony with a shallow extracting-super of early-gathered honey of known good quality, this being put on top of the brood-chamber when the extracting-supers are removed. Others have this honey stored in standard sized frames, and either winter in two stories or put some of this choice honey into the brood-chamber where the bees will be induced to use it first.

Winter Protection.

As a rule, the first thing that comes to mind as winter protection in outdoor wintering is a winter packing case or a double-walled hive. Later we think of protection from the wind. Both of these are needed, and it would be difficult to say which is of greater importance for the average northern location. In certain windy locations there is no doubt that protection against the wind is of greater importance than winter packing. But this is no reason for not having both.

Where the apiary is not already protected from the wind by buildings, by a hill, by a hedge or a thick growth of young timber, or by some other natural protection, some kind of windbreak should be erected. In some cases a temporary windbreak can be made by storing corn fodder along a fence in such a manner that the force of the wind is broken. Where the apiary is partially protected by buildings it often happens that the location of the building is such that the sweep of wind between the buildings through a portion of the apiary is greater than out in the open. In such cases the gap between the buildings should be closed by some kind of windbreak.

A high board fence about eight feet high makes a good windbreak, but the boards should be spaced about an inch apart to permit some of the air to pass through, thus preventing the wind sweeping over the top of the fence, then down on the other side.

Winter Packing.

Whether the packing is in the form of permanently packed hives or in the form of winter cases set over single-walled hives with packing between, makes but little if any difference so far as wintering is concerned, provided the packing is adequate. Neither does there seem to be any great difference in the way the bees winter when packed singly or in groups of two, four or more colonies in a packing case. The larger cases cost less per colony, but for convenience in handling the bees during the summer most beekeepers prefer to have not more than four colonies in one group, two facing east and two facing west. Some object to this grouping, preferring to have the hives all facing away from the prevailing winds; but this is not at all necessary, if a windbreak is provided and the entrances reduced as they should be.

If the lay of the land in the apiary makes it desirable to have the hives all face the same direction, either the two-colony winter cases or single-colony cases are usually used. Packing several colonies in a row has so many disadvantages that this plan is not much used. It usually results in drifting, and the inconvenience of either having hives close together during the summer or moving them apart in the spring is objectionable.

Permanently packed hives have many advantages where apiaries are not moved about much. In many cases such hives afford the best solution of the problem of winter packing.

Thickness of Packing.

The amount of packing used by beekeepers varies all the way from less than two inches on the sides up to eight inches; on the top, from three or four inches up to a foot or more; and below the hive, from none at all to about four inches. There is now a strong tendency toward building standard winter packing cases to hold four inches of packing below, six inches on the sides and eight to ten inches on top, though in some cases more than this is used. Colonies properly packed in such winter cases have been wintered well year after year in the extreme northern part of the United States and in Canada. Beekeepers cannot well be expected to agree upon the question of the thickness of packing, for in a location that is well protected from prevailing winds two or three inches of packing may afford as much protection as six or eight inches in another location badly exposed to strong winds. Since it costs but little more to build a packing case a couple of inches longer and wider and since the packing material is usually not expensive, it is better to err on the safe side and provide for ample packing.

Material for Packing.

It is well to remember that the heat-re-

Double-walled hives with built-in packing are easily prepared for winter.

taining properties of the packing material are in the minute air spaces within this material. If material too coarse, such as straw, excelsior, or coarse planer shavings, is used, the air spaces being large will permit some circulation and therefore a more rapid loss of heat. The packing material should be fine enough to prevent this. For the same reason the space between the walls of a double-walled hive should not be left unpacked. If the confined air in this space could not circulate there would be no need of packing, but the difference in the temperature of the inner and the outer walls causes air currents within this so-called ''dead-air'' space that result in a rapid loss of heat unless this space is filled with packing. In this sense the function of the packing material is to prevent the movement of the air between the outer and the inner walls, the confined air itself being the means of preventing the rapid escape of the heat. Wheat chaff if obtainable, fine planer shavings from a planing mill, forest leaves that are broken and crushed so that the spaces between are small, or dry sawdust are the materials most commonly used. In any case, the packing material must be kept dry since wet packing would be worse than none.

Loss of Heat by Air Currents.

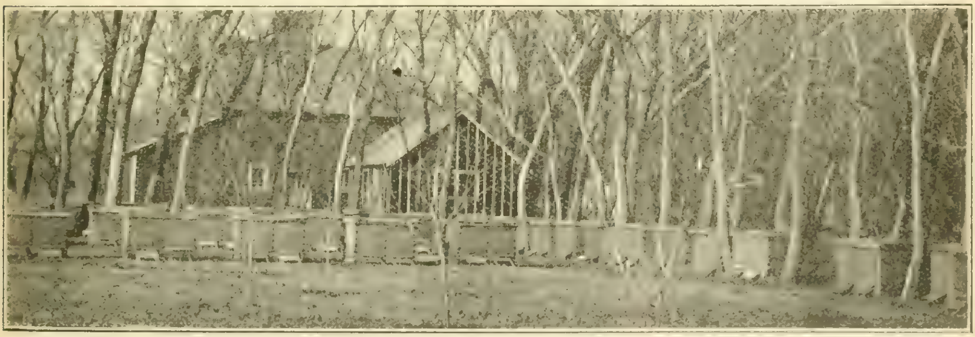
No matter how much packing is put around a hive, if a large entrance is left wide open the packing will do but little good. The same thing is true if cracks or openings other than the entrance are left where currents of air can pass through. Those who use the double-walled hive having a tray with burlap bottom for holding the packing on top should snug down the packing material around the outer edge of the tray to be sure there can be no air currents between the lower edge of the tray and the water table below. If the hive could be hermetically sealed with the exception of a small entrance, there would be but little if any loss of heat from air currents. In the far north where a slight amount of upward ventilation may be necessary to prevent the condensation of moisture within the hive, it is well to place a sheet of newspaper above the quilt to prevent air currents from passing out through the packing at the top of the hive.

The Entrance.

The bridge or tunnel forming the entrance through the packing should be generous in size, and the entrance proper reduced to the required size on the outside. In most cases ⅞ of an inch high by the full width of the hive is plenty large enough for the tunnel, though some beekeepers prefer to have the tunnel 1½ or even 2 inches high and not so wide. An opening through the outer case 6 or 8 inches wide and the same height as the tunnel, but provided with a button fastened at one side of the opening and of such a length that it closes the opening except about three-eighths of an inch wide at the end, is a good construction for the entrance. When this button is turned in the position to close the entrance it forms a winter entrance ⅜ of an inch wide and from one to two inches high, according to the depth of the opening in the outer case. Such an opening could not well become clogged with dead bees, even though none should be carried out of the hive during the winter. Instead of this construction some prefer to bore four or five ½-inch auger holes through the outer case, and close all of these except one or two during the coldest weather. There should be no alighting-board attached to the outer case because this only serves to collect the snow or sleet during the winter.

Paper Winter Cases.

Those who do not care to invest in expensive winter cases can winter their bees just as well in winter cases made of tarred paper at very little expense. When slater's felt is used and the bees are packed in groups of two colonies each the expense for the tarred paper is less than six cents per colony. This material is so cheap that it is best to burn up the paper in the spring when unpacking and buy new each year. This method of packing bees was described in the October (1921) issue. Those who do not have this number of the journal can no doubt pack their bees in this way by studying the illustrations on pages 644 and 645 in this issue. When a form such as there described is used bees can be packed rapidly by this method.



Apiary in Kansas packed in cases made of tarred paper tacked to a light framework.

NOT EXACTLY BEEKEEPING; BUT—

More About the Bee-Sting Rheumatism Cure.

One day, not a great while ago, Mr. Middlerib read in his favorite paper a paragraph stating that the sting of a bee was a sure cure for rheumatism, and citing several remarkable instances in which people had been perfectly cured by this abrupt remedy. Mr. Middlerib thought of the rheumatic twinges that grappled his knees once in a while and made his life a burden.

He read the article several times and pondered over it. He understood that the stinging must be done scientifically and thoroughly. The bee, as he understood the article, was to be gripped by the ears and set down upon the rheumatic joint and held there until it stung itself stingless. He had some misgivings about the matter. He knew it would hurt. He hardly thought it could hurt any worse than rheumatism, and it had been so many years since he was stung by a bee that he had almost forgotten what it felt like. He had, however, a general feeling that it would hurt some. But desperate diseases require desperate remedies, and Mr. Middlerib was willing to undergo any amount of suffering if it would cure his rheumatism.

He contracted with Master Middlerib for a limited supply of bees humming and buzzing about in the summer air. Mr. Middlerib did not know how to get them. He felt, however, that he could safely depend upon the instincts and methods of boyhood. He knew that if there was any way under heaven whereby the shyest bee that ever lifted a 200-pound man off the clover could be induced to enter a wide-mouthed glass bottle, his son knew that way.

For the small sum of one dime Master Middlerib agreed to procure several, to wit: six bees, sex and age not specified; but, as Mr. Middlerib was left in uncertainty as to the race, it was made obligatory upon the contractor to have three of them honey and three humble, or, in the general accepted vernacular, bumblebees. Mr. M. did not tell his son what he wanted these bees for, and the boy went off on his mission with his head so full of astonishment that it fairly whirled. Evening brings all home, and the last rays of the declining sun fell upon Master Middlerib, with a short, wide-mouthed bottle comfortably populated with hot ill-natured bees, and Mr. Middlerib and a dime. The dime and the bottle changed hands. Mr. Middlerib put the bottle in his coat pocket and went into the house, eyeing everybody he met very suspiciously, as though he had made up his mind to sting to death the first person who said "bee" to him. He confided his guilty secret to none of his family. He hid his bees in his bedroom, and as he looked at them just before putting them away he half wished the experiment was safely over. He wished the imprisoned bees did not look so hot and cross. With exquisite care he submerged the bottle in a basin of water and let a few drops in on the heated inmates to cool them off.

At the tea-table he had a great fright. Miss Middlerib, in the artless simplicity of her romantic nature, said: "I smell bees. How the odor brings up—" But her father glared at her, and said, with superfluous harshness and execrable grammar: "Hush up! You don't smell nothing."

Whereupon Mrs. Middlerib asked him if he had eaten anything that disagreed with him, and Miss Middlerib said: "Why, pa!" and Master Middlerib smiled as he wondered.

Bedtime at last, and the night was warm and sultry. Under various false pretenses, Mr. Middlerib strolled about the house until everybody else was in bed, and then he sought his room. He turned the lamp down until its feeble ray shone dimly as a death-light.

Mr. Middlerib disrobed slowly—very slowly. When at last he was ready to go lumbering into his peaceful couch, he heaved a profound sigh, so full of apprehension and grief that Mrs. Middlerib, who was awakened by it, said if it gave him so much pain to come to bed perhaps he had better sit up all night. Mr. Middlerib choked another sigh, but said nothing and crept into bed. After lying still a few moments he reached out and got his bottle of bees.

It was not an easy thing to do to pick one bee out of the bottleful with his fingers and not get into trouble. The first bee Mr. Middlerib got was a little brown honeybee, that wouldn't weigh half an ounce if you picked him up by the ears, but if you lifted him by the hind leg would weigh as much as the last end of a bay mule. Mr. Middlerib could not repress a groan. "What's the matter with you?" sleepily asked his wife. It was very hard for Mr. Middlerib to say he only felt hot. but he did it. He didn't have to lie about it, either. He did feel very hot indeed—about 86° all over, and 197° on the end of his thumb. He reversed the bee and pressed the warlike terminus of it firmly against the rheumatic knee. It didn't hurt so badly as he thought it would. It didn't hurt at all.

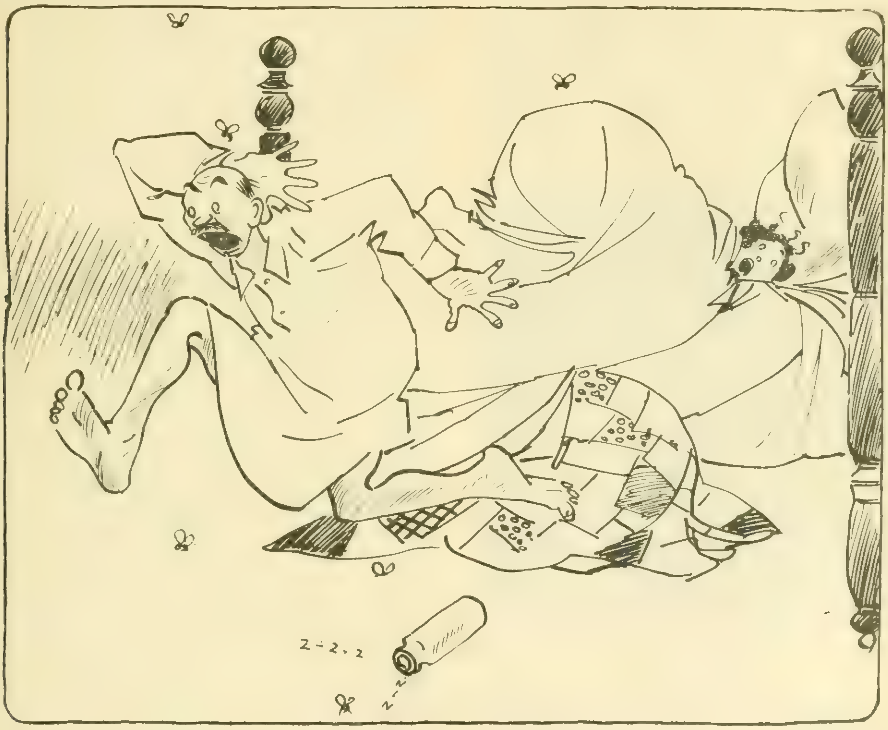
Then Mr. Middlerib remembered that when a honeybee stabs a human foe it generally leaves its harpoon in the wound, and the invalid knew that the only thing this bee had to sting with was doing its work at the end of his thumb.

He reached his arm out from under the sheets and dropped this disabled atom of rheumatism liniment on the carpet. Then, after a second blank wonder, he began to feel around for the bottle, and wished he knew what he did with it.

In the meantime strange things had been going on. When he caught hold of the first bee, Mr. Middlerib, for reasons, drew it out in such haste that for a time he forgot all about the bottle and its remedial contents, and left it lying uncorked in the bed, between himself and his innocent wife. In the darkness there had been a quiet but general emigration from the bottle. The bees, their wings clogged with the water Mr. Middlerib had poured upon them to cool and tranquilize them, were crawling aimlessly about over the sheet. While Mr. Middlerib was feeling around for it, his ears were suddenly thrilled and his heart frozen by a wild, piercing scream from his wife.

"Murder!" she screamed. "Murder! Oh! Help me! Help! Help!"

Mr. Middlerib sat bolt upright in bed. His hair stood on end. The night was warm, but he turned to ice in a minute.



"Where in thunder," he said, with pallid lips, as he felt all over the bed in frenzied haste, "where in thunder are them infernal bees?"

And a large "bumble," with a sting as pitiless as the finger of scorn, just then climbed up the inside of Mr. Middlerib's nightshirt, until it got squarely between his shoulders, and then it felt for his marrow, and said calmly: "Here is one of them."

And Mrs. Middlerib felt ashamed of her feeble screams when Mr. Middlerib threw up both arms, and, with a howl that made the windows rattle, roared: "Take him off! Oh, land of Scott, somebody take him off!"

And when a little honeybee began tickling the sole of Mrs. Middlerib's foot, she shrieked that the house was bewitched, and immediately went into spasms.

The household was aroused by this time. Miss Middlerib and Master Middlerib and the servants were pouring into the room, adding to the general confusion by howling at random and asking irrelevant questions, while they gazed at the figure of a man a little on in years, arrayed in a long nightshirt, pawing fiercely at the unattainable spot in the middle of his back, while he danced an unnatural, weird, wicked-looking jig by the dim religious light of the night-lamp. And while he danced and howled, and while they gazed and shouted, a navy-blue wasp that Master Middlerib had put in the bottle for good measure and variety, and to keep the menagerie stirred up, had dried his legs and wings with a corner of the sheet, and, after a preliminary circle or two around the bed to get up his motion and settle down to a working gait, he fired himself across the room, and to his dying day Mr. Middlerib will always believe that one of the servants mistook him for a burglar and shot him.

No one, not even Mr. Middlerib himself, could doubt that he was, at least for the time, most thoroughly cured of rheumatism. His own boy could not have carried himself more lightly or with greater agility. But the cure was not permanent, and Mr. Middlerib does not like to talk about it.

[An article by Robert Jones Burdette (1844—) in the New York Weekly, not now existing.]

FROM THE FIELD OF EXPERIENCE

HOMEMADE PASTE FOR LABELS

How to Make Paste that will Stick to Either Tin or Glass

Here is a recipe for making a paste that will stick labels to tin or glass so they will not come off. It is the surest to stick and the simplest to make of any paste that I know of, and I do not think the recipe has ever been published. I give the directions for a small quantity, and those wanting a larger amount can increase the proportions.

Place one ounce of cornstarch in a small pan or other vessel, and then measure out one and one-half pints of water. Add a little of the water to the cornstarch and rub it or stir it until smooth, after which add the rest of the water and mix thoroughly. Shake into this powdered lye, stirring briskly all the while until it turns thick and becomes transparent. Instead of the powdered lye a strong lye solution can be made up and a little of this added instead. Be careful and do not add any more lye than necessary. If a wide-mouthed bottle is used to mix in, the mixing can all be done by placing the cap on the bottle and shaking vigorously. This paste keeps quite well, especially if put in a cool place; and after making it a few times it can be done without measuring the ingredients and can also be made very quickly. It should be quite thick for best results, and if too thick it can be thinned by adding water. If you have ever had trouble in making labels stick to tin try this next time, as it will surely do the work and is inexpensive.

Brigham City, Utah. J. H. Peterson.

* * *

ALFALFA YIELDS IN THE EAST

Forty Pounds of Surplus Secured from this Plant in Pennsylvania in 1921

It is quite generally believed that alfalfa does not yield nectar in any quantity east of the Mississippi; and I must say in my first seven years of beekeeping experience I never saw a bee on alfalfa bloom, nor alfalfa produce seed. I was certain I would never get any surplus honey from it in this section. But alfalfa gave me a surprise last year (1921), for it yielded not only nectar but a surplus of honey, which in some colonies reached 40 pounds, and that which was allowed to stand produced a big crop of seed.

The first cutting of alfalfa was very late last year, due to late frosts and rainy weather at harvest time. Some of it was cut as late as July 25 and very little by July 8. The second cutting grew very fast. It was this second cutting that yielded the nectar. It began to bloom when about 12 inches high, and instead of a few small flowers it was covered with large fully developed bloom.

This honey flow came at a time when there was nothing else for the bees to gather. It kept the colonies strong for the fall honey flow from aster and goldenrod, and in excellent condition for winter. As a result they wintered 100 per cent, and I had such strong colonies this spring that I took quite a surplus during fruit bloom.

Why did alfalfa yield so heavily last year when it had yielded little or nothing before? Was it the season? Because it was cut late? or has it become acclimated?

At that time I thought it was because the first crop was cut so late. Some fields that were cut early didn't yield at all, but this year the first cutting yielded nectar during May. And the second cutting promises to do as well as last year or better.

Landenburg, Pa. John Lund.

* * *

BEES ROB COLONY BEING FED

How a Beginner Learned a Valuable Lesson in Feeding Late in the Season

Last year was my first experience with bees. I bought three colonies from an old lady neighbor. These were in old box hives, and my experience began immediately. I had supplied myself with eight-frame Jumbo hives complete and made the transfers in approved form, save only the stings were not omitted. One of the old boxes being especially frail and open, I got an unusual number of stings, but I never rested till all were properly in their new homes and in place under my splendid peach trees. This transfer was made late in August, and I soon found it would be necessary to feed. Here is where my first disaster occurred.

I read everything they sold me on ''Feeding'' and proceeded. I bought 100 pounds of sugar and with carefully prepared friction-top tins gave it to them, not forgetting the temperature. My tenants were properly housed on full sheets of the best Airco foundation. I forgot, after supplying the tempting sweet, to contract the otherwise large entrances. After a while I looked in to see how snugly they had placed their stores. Can you imagine my surprise? Not a comb drawn, not a cell filled! Don't say ''Robbers!'' I guess I know it! If I hadn't had two other old colonies in the orchard, my disaster would have been complete. Not only was my sugar gone, but the colonies thus robbed died of starvation. I was reminded of the scripture, "To him that hath shall be given, and from him that hath not, shall be taken, even that which he hath."

But my two old colonies saved the day. They were the robbers. With the extra stores they came out this spring with strong forces. From one of these I took 75 pounds of comb honey (and a bad year, too), and then divided it four ways. With three young queens I now have four likely nuclei, which I have carried to the near-by cotton fields to build up. Here they will have at least 90 days of bloom before frost. The other colony I divided early and raised my own queens, so that I now have a total of eight colonies and am both richer and wiser. By the way, I also got the biggest fruit crop I have ever had.

Fort Worth, Tex. Ocie Speer.

A YOUNG BEEKEEPER

What Beekeeping Can Do for Boys. Value of Bees as Pollinators

George Pettee of Hartford is the youngest member of the Connecticut Beekeepers' Association. He started keeping bees at the age of thirteen with one colony, and celebrated the Fourth of July with his first swarm. As will be seen by the photograph of him on that historic occasion, his methods at that time were primitive. That is to say, letting bees swarm may now be called primitive, though in his case a modern queen trap was successfully used. Although the season was late, this swarm gave him some very superior comb honey before the clover honey flow was over.

There were about 20 young fruit trees in the garden where George kept his bees, and after the introduction of his colony the fruit crop was more than doubled. George and his younger brother Charles negotiated with the family for the privilege of selling the surplus fruit. It netted over $75 in one season. This sum bought a Novice extractor and the equipment for four colonies.

Their business has overgrown its city location, and at their earnest request the family has recently purchased an old abandoned farm on the Connecticut River. The place is well known as Rivercrest, and is overgrown with sumac. They hope to restore its old neglected orchards, and develop it in fruit, bees and poultry, putting in their vacations in hard work through their college years.

Since acquiring the Novice extractor George has had no swarms. His colonies are so large that they have to be wintered with supers, and supers are added as fast as the queen enters them. When the clover flow begins the queen is confined to the first floor, and the honey frames are extracted and returned to the supers as fast as they are finished. By finished we mean wholly capped. During our second season we acquired a beautiful supersedure queen. She built up our strongest colony, and no queen-cells are ever found in her household. She is a good ruler. Her workers are the first out after a rain, and the last to submit to a drizzle or cold wind. Needless to say, they store more honey than our other colonies. This fall, however, all four colonies go into the winter with queens bred from this mother. To get them we gave other colonies frames from her hive, first removing their queens, later selecting the biggest queen-cells on these frames.

We live in a part of Hartford which is suburban in character, and find it a good location for beekeeping. Our colonies average over 50 pounds in poor seasons. The bees store an early surplus from ornamental trees and shrubs, and later the lawns abound in white clover.

The youngest member of the Connecticut Beekeepers' Association.

At the end of the early honey flow this year we put out a sign reading "Fresh Honey, 45c a lb." We had to take it in in three days, sold out, although the residence street on which we live is not a much-used thoroughfare.

Interests of this character are very stimulating for boys, and have a character-building influence which many of the established courses in our educational system can never attain. A boy can hardly find a better lesson in civics than a beehive will give him. He learns valuable lessons in natural laws. He must practice self-control or fail. He cannot evade responsibility in caring for live creatures. He must be faithful to this obligation or witness the suffering that will

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be the consequence of his neglect. The demonstrations ever before him of the results of principles of up-breeding put into practice give him ideas which ought to result in a better human race if more boys could be exposed to them. Less theory and more practice in the science courses in our dry educational system ought to bring our civilization nearer to the perfection of the colony life of the hive. Edith Pettee.

Hartford, Conn.

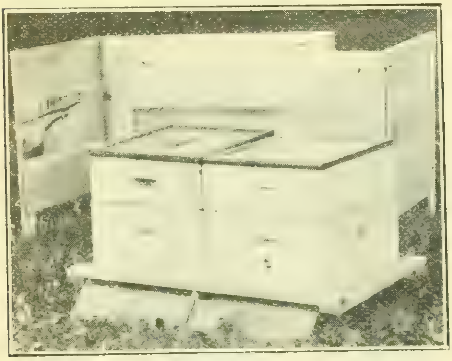
* * *

FORM FOR PAPER PACKING

How to Make One That Prevents the Sides From Bulging

I tried packing a few colonies by the paper method shown in October Gleanings last year. It is very cheaply and quickly done, but I use a 4-inch frame instead of a two-inch frame as there described. My bottom-boards are 24 inches long. I pack two colonies to the case, and I had trouble with my paper bulging too much in the middle at the expense of the corners, so I tried making a box out of some empty store boxes I had on hand. They were of ⅜-inch lumber. I made the box in two parts, one end and one side in each part. The sides and ends are 24 inches wide, having a 1 x 2 inch cleat nailed at each corner, the cleat extending 6 inches below the sides. The open corners are held together with hooks and eyes. When the paper is tacked to the frame ready to fill, I set the two halves of this form around the hives and fasten with the hooks. This holds the paper from bulging, and the corners fill out better and the paper will stand more tamping. When filled unhook corners and you have a nice square uniform packed case. By letting the cleats extend below the sides, if the hives are on uneven ground, the cleat on the high side can be pressed into the ground to make the form level. The cleats should be nailed on the outside, and the form should be made large enough to go around outside of the case easily. One inch larger than the case frame each way is about right. S. Rouse.

Hebron, Ky.



Rim in place at lower edge of hives. Form taken apart at back.

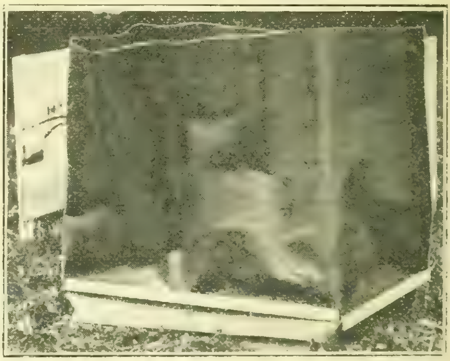
* * *

ROBBING BEES TEAR DOWN COMBS

Peculiar Behavior of Bees in Robbing. Effect ot Feeding Queenless Colony During Dearth

In the last part of July I put two Mason fruit-jar feeders on a hive of bees that was queenless and had no honey. I had planned to introduce a queen and tried to fill them up. Imagine my surprise when soon after the feeders were on I found that the platform entrance to the hive was completely surrounded with pulverized comb. I at once opened the hive and found that the bees had torn down the cell walls of the combs, leaving merely the middle foundation. It is evident that the whole apiary went to robbing this particular colony and one other, with the same results except that there was not so much comb around the entrance but innumerable dead bees. Has any one else had experience with such annihilation started by feeding a queenless colony? The robbing of the sweets is easily understood, but what could possibly be the reason for pulling the comb all to pieces? I am sure there was not a drop of honey in the hive when I started feeding. Edward F. Bigelow.

Sound Beach, Conn.



Slater's felt tarred paper fastened at lower edge by tacking on lath.

[It is quite the common thing for robbing bees to gnaw down the combs when robbing out a single colony. It has long been known that when extracting-supers are placed out in the open to be cleaned up by the bees after the honey has been extracted, if only a few sets of combs are given the bees will

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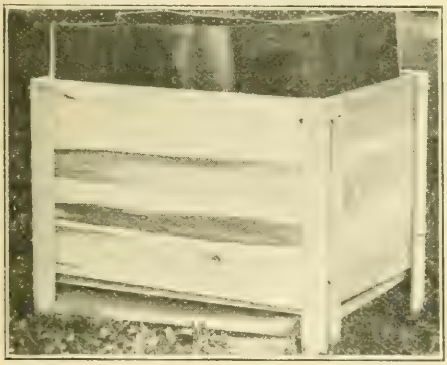
tear them down almost completely. To prevent the bees from tearing down the combs in this manner, it is necessary to give them a large number of combs to clean up. The same thing is true when unfinished sections are placed outside to permit the bees to clean them up. If only a single super of unfinished sections were exposed the bees would no doubt gnaw out the combs almost completely. They do this because they crowd upon each other so much, sometimes piling up several deep on the combs. When they behave in this manner a bee that can come in contact with comb will tear it away in order to secure some honey. Sometimes even when there is no honey left in the combs the bees, evidently thinking that there is still some there, will crowd on the comb and tear it down as here described. In the general excitement and scramble the bits of wax are pulverized and pushed out at the entrance.—Editor.]



Form set in place and hooked at corner ready for packing.

FALL TREATMENT

Shaking on Combs Filled with Honey in Fall after Brood Rearing has Ceased

It seems to me it is a shade safer to shake the infected bees on to empty frames instead of on to full combs of honey, and especially so if there are a few unfilled or uncapped cells.

In shaking on to empty frames it is necessary to have some prepared bee candy, a pound or more for each colony treated, and this to be placed where the bees can readily gain access to it, preferably on top of the frames. This can be given immediately after the bees are shaken; but seemingly the best plan is to wait about 24 hours, and then the candy may be placed right over the cluster.

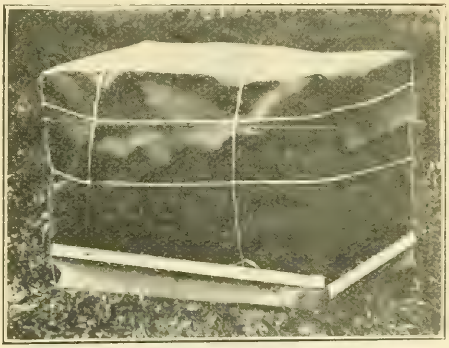
Leave the bees thus for three or four days, when some of the empty frames should be removed and combs of honey placed right against the cluster, which will soon occupy the combs given; or, in case of strong colonies, set a hive containing the necessary number of full combs on top of the hive containing the bees. The bees will soon go up; then the lower empty hive may be taken away, and the upper one put in its proper place.

It seems that this would almost insure that the bees would consume all of the infected honey taken when shaken, and be rid of the spores before coming in contact with the non-infected combs. At least I have treated several as above described, and they were free from disease the next year.

In giving combs of honey to bees thus treated it has generally been my practice not to give a full hive of combs. If the colony is just fair in strength, I give three or four combs; if strong, I give five or six combs. About the middle of April or perhaps sooner I look them over and add more combs of honey as needed until the hives are filled, always taking care that the stores are ample.

L. S. Harner.

Colorado Springs, Colo.



Packing completed. Note how cover is folded and the whole tied like a package with twine.

THE OUT-CLUSTER AT MORNING

The Beginning of a New Day in the Hive. How the Colony Awakens

One of the most interesting things to watch about the hive is the behavior of the out-cluster from dawn until work begins.

After the cool hours of the night the cluster outside the hive is slightly torpid. The wings of the bees are close to their bodies; their antennae not very erect; their legs drawn in close to their thoraces. The vigorous fanning of the bees inside can be heard, but not a wing stirs on the entrance-board or above it where the cluster is. The bees clustering out take up, seemingly, all

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the space of the entrance and keep out the air, but air must get in between them, else all inside would perish.

Now the light gains a little; the mists in the valley begin to lift. The first breath of dawn-wind comes. The bees in the out-cluster act as if stirred imperceptibly. A wing is lifted here and there, an antenna waves, legs move. But the bodies remain quiet.

The flush of dawn on the eastern hill grows and grows. Suddenly the sun itself peeps over, sending a ray across the intervening space. It goes high overhead, but its influence has been felt in the air, for the atmosphere seems a little warmer. The mists, like magic, have gathered, and now clear spaces appear here and there. The ray of the sun grows less and less as a cloud drifts in between it and earth, and then the out-cluster quiets. But as the cloud passes the sun has come up far enough to send its full beams straight into the valley and they strike the hive. And now—presto! From the interior a busy worker, bent upon some early errand—getting water, pollen or something else a new baby bee needs—comes out from between the listless ranks of the out-cluster, shoving the somnolent bees aside unceremoniously. She pitches out into the golden space of the dawn with a determined ''zum-m-m-m-m!'' as who should say: ''Come, laggards; there's work to do. Follow my example.''

Another follows and another. Each, in passing, stirs up the cluster; and now suddenly a bee, that must have been caught far from home by the early, cloudy nightfall of the day previous and rested all night under a clover bloom or broad blade of grass, comes home with her load. She pitches on to the alighting board, striking the now awakening cluster-bees with a bang, buzzes through them and is gone.

Many other bees come from the interior of the hive; others begin to arrive from the near-by places to which they have gone for their earliest loads of emergency rations. All this passing and pushing have stirred up the out-cluster. Its members brighten up at each jostle, and suddenly one of them, taking the fever, perhaps warmed up now by the gaining sun, launches forth. Her nearest neighbor, feeling no longer the touch of the absent one, stirs about inquiringly, runs about a little, and then she, too. pitches off the board and is gone. Another and another follow suit and then by twos, threes, fives, tens and finally by the hundred, the bees of the out-cluster go to the field, accompanied by the eager myriads that have been meanwhile issuing from the interior of the populous community. The hive is awake! George Gilbert.

Port Dickinson, N. Y.

COLLEGE AND BEES

How a Student Earns Enough During Summer to Attend College in Winter

Edmund Daggett, a student at the University of Minnesota, is beekeeping his way through college. An apiary of 130 colonies of bees on his father's farm pays the room rent, laboratory fees and board bills.

Eight years ago this spring Daggett bought one colony of bees. During the summer he bought two more, and two more were added by swarming. In the fall he started to school at the State Agricultural College.

As time went on, Daggett's bills increased. But so did the bees. Soon they were paying most of the expenses. During summer vacations Daggett had plenty of time to look after the bees.

''Beekeeping is a fine way to get through college,'' says Daggett, who is now taking a course in the graduate division of the university. ''During the fall, winter and spring when college is in session, there is little work to be done in the beeyard, nearly all of the work with the bees being concentrated in the three months of the summer vacation. No other occupation offers such an ideal distribution of work for college students. To be sure, when many colonies are kept it is necessary to make occasional visits to them over week-ends, especially during the spring months.''

When college is out in June the bees have already begun to work in the clover fields, and it is necessary to see that they have plenty of storage room for the honey that is coming in. Swarming is prevented as much as possible, which is not difficult when extracted honey is produced. In July and August the honey is prepared for market. It is put up in sixty-pound cans and in five and ten pound pails. In August and September the bees are put in condition for winter. Each colony, to winter safely, must be strong, must have plenty of honey of good quality and must be headed by a good queen.

The bees are put in the cellar in November, a trip home being made for that purpose. After that they are left almost entirely alone until it is time to put them outdoors again the first of April. During April and May they are visited for a day or two every two or three weeks, in order to build them up strong for the new honey flow in June.

''Go slow and let the bees pay their own way,'' is Daggett's advice to those who may want to follow his example. ''It is best to start with not more than perhaps three colonies, and to buy these in the spring. They will increase by swarming to six or eight the first year, if no swarm-control method is used.''

Narberth, Pa. E. A. Kirkpatrick.

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HONEY PRODUCERS' LEAGUE

A Message from the New President of the American Honey Producers' League

Never was there a time in the history of American beekeeping when organization among beekeepers is more necessary than at the present time. The beekeeping industry is sufficiently large in the United States to warrant a national organization of great strength. However, each individual beekeeper seems to feel that his business is not sufficient to warrant his taking an active part in such an organization. There also seems to be a feeling among beekeepers that the allied industries and the bee journals are not working for the best interest of the beekeeper. In a few cases this may be true, but in general the supply dealers, the honey bottlers, can-manufacturers and other trades are much more interested in the success of the beekeeper than is the beekeeper himself. In fact the allied trades have done more to make the beekeeping industry a success than have the beekeepers.

Low prices for honey, in most cases, can be traced to price-cutting by individuals who have no conception of the effect of their acts upon the whole market condition. Local organizations for marketing honey have been formed at one time or another in the main honey regions of America. However, these for the most part have failed to succeed because the beekeepers themselves do not support the organizations with which they are connected. In a number of cases where these organizations have worked satisfactorily, individuals and even groups of beekeepers have worked against them with a very demoralizing effect.

The executive committee of the American Honey Producers' League requests each and every individual and agency, including supply dealers and bee journals, to support the League both morally and financially. In the near future we hope to be able to devise some means of contact with every individual member of the League through circulars or bulletins. While this movement is getting under way, it is necessary that we have the support of every bee journal and other bee publications to further our cause. I am therefore requesting at this time that each of these publications give us space for discussion of the League and getting information before the beekeepers of every state.

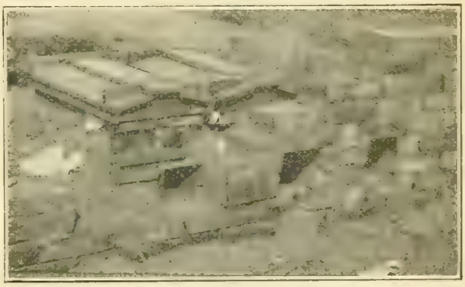
H. F. WILSON,
President, American Honey Producers' League.

[While tbe bee journals can and should devote some space to the League, the amount of space available in this way is necessarily quite limited and entirely inadequate. In order to hold its membership, the League must have better contact with its individual members. If the League can arrange to put out an annual report, as was done by the National Beekeepers' Association, publishing the papers submitted at the annual meetings, the small beekeeper would feel that he is getting value received for his membership fee in this annual report alone. The papers sent to Salt Lake City at the last meeting of the League should be published. The bee journals can not publish these papers because of lack of room. They would fill a good-sized annual report.—Editor.]

WINTER PACKING IN KOREA

A Winter Packing Case Made of Brick and Packed with Rice Chaff

One of my friends in Chosen (Korea), whose name is S. Mori, practices a convenient and economical method of packing for wintering of bees. Chosen is a very cold part of the earth, with a bad climate. The ground freezes about three or more feet deep in winter, and there are about four warm days after about three cold days in turn, as a rule. Hence, the bees are likely to winter very badly.



Winter packing case made of brick in far-away Korea.

Mr. Mori's plan is this: The outer case is built from common bricks, no cement material being used. The case, if it may be so called, is easily built up, and taken down in the spring. In the spring he makes a plain platform for hive-stands from the bricks taken down, so that no grass will grow, and he does not feel the need of a storage place for winter cases. Those bricks are to be used year after year.

The illustration shows the manner of building up the winter case. Mr. Mori uses rice chaff for packing. He makes the roof of rice-straw mat, which is used for the sack of rice in Japan. But he states that he will make the roofing from sheeted tin next year, because he found that the rice-straw mat will not stand so well against rain and melted snow in the spring months. He inserts pieces of used newspaper in the entrances to prevent the bees from coming out on warm days to be stricken down by the chill wind, keeping the entrances out of sunlight. He also puts a wire guard in every entrance so that mice (which are so abundant in Chosen) cannot enter and damage the contents of the hives. Yasuo Hiratsuka.

Tara, Gifu-ken, Japan.

SELLING HONEY LOCALLY

Relation Between Prices to Producers, Retailers and Consumers in Various-sized Packages

Let us remember that the retail price to the consumer is the final criterion of sales and test of marketing efficiency. I think comb honey at 50 cents a section is out of reason and sure to cause a severe reaction. But I do not produce comb honey now and will confine this discussion to extracted.

To simplify things, let us divide the selling price per pound into two parts. First, the return for the honey alone, which we will call the base; second, the cost of containers and casing per pound. We notice that containers cost most where the most honey is produced, owing to long freight haul.

In this article wholesale pack means honey cased in 5-gallon cans, two to the case, and indicated by Csd 2-60.

Retail pack is cased 6 ten-pound tins, 12 five pound tins, and 12 (or 24) two and a half-pound tins to the case, indicated by Csd 6-10, Csd 12-5, Csd 12-2½, etc.

The cost of cans and cases for the wholesale pack (Csd 2-60) is one and a half to two cents per pound. For the retail pack, if made directly after extracting, the cost for containers and cases is two and a half to three cents per pound for Csd 6-10, Csd 12-5, Csd 24-2½, and about three and a quarter for Csd 12-2½. Let us say 3 cents per pound for the retail pack, and a little under 2 cents for wholesale. The difference is close to one cent.

Table of Prices to Producer, Retailer and Consumer.

			Price to Retailer	Retail Price
Base.	Csd 2-60	Csd 12-5	Csd 12-5	Csd 12-5
4	6	7	8	11
6	8	9	10	13
8	10	11	12	16
10	12	13	14	18
12	14	15	16	20

The figures in the above table mean cents per pound. The first column shows base prices or what the producer gets. The second and third columns add the cost of containers and cases for wholesale and retail pack. The fourth column shows what I think a fair increase for retail pack to the local dealer, one cent per pound. Note that in addition the producer usually saves the cost of cases when selling locally. All these figures neglect small fractions, but I think those in the fourth column are not in error by so much as half a cent.

What I am advocating is the sale of honey as a food commodity entirely outside the class of champagne, chorus girls and platinum jewelry. My personal belief is that the 12-2½ pack will eventually take the lead over the 12-5 at an increased cost of less than half a cent a pound.

Taking the country over, base 4 is too low to keep the business going. Base 6 is better than is now being realized by many large producers in the West. But base 8 can be reached if all try to use the local markets right. Base 10 is not too high proportionately to prices of fabricated commodities, nor likely to be so in the future.

The retail prices in column five for honey in 5-pound tins give the retailer 30 odd per cent, which he can shade for cash.

Taking up base 8 in detail suppose the producer sells the 12-2½ pack for $3.60 to the retailer, and $4.00 to individuals. He will not hurt the retailer, who can sell locally at 40 cents for the 2½-pound can, and not over 45 cents within the 100-mile range.

The cost to re-handlers of the crop shipped out on base 6 and base 8 with freight added will be 11 to 13 cents and very little will be sold them at base 10. The cost of glass jars and cases will add 7 to 10 cents for 1-pound and 6½-ounce glass packages. The price to grocers will run close to 30 cents, and the retail price 50 cents a pound and up. This last price could not be much less if producers supplied honey gratis (base zero).

Efficient marketing of honey demands, as I see it, that all who produce honey at base 7 to base 8 shall see that their 2½ and 5 pound cans are retailed within a hundred-mile radius at 15 to 16 cents a pound.

But this honey must be carefully strained when extracted, labeled with the producer's name and handled right all the way through. The honey should be as clear as if to be bottled. The extra cost is a small fraction of a cent per pound.

I am selling, this season, at base 7½. Local dealers sell my 2½-pound pack at 35 cents each. I do not expect to ship over the range at all, though my customers have done so. The notion of selling fair-sized tin packages to local customers and retailers at prices that approach the cost of bottled honey does not appeal to me as a business proposition.

I believe that if the base is placed at 8 the whole crop can be sold and a great new market opened, and the beauty of it, practically free of a railroad tariff that hurts the cheap syrups even worse yet. The thousand-mile-haul business is another story, as to which we should worry if we sell honey to our neighbors as we expect them to sell grain and potatoes and meat to us.

Laplata, N. M. Harrison H. Brown.

SIFTINGS

J. E. Crane

THE reports of the honey crop for 1922 say the crop is "spotty," i.e., good in some places and poor in others. In our county the crop is very good, while in the next county to the south, very poor. How can we account for this? Doubtless much depends on the soil and weather. It is very noticeable that our best seasons on clay soils are wet seasons, while the best seasons on light soils are those years that are considered dry. It was not surprising to learn this season that the crop was light where apiaries were located on light loam or gravelly soils.

* * *

That bulletin of the U. S. Department of Agriculture, No. 222, mentioned on first editorial page, I have found of great interest. I was especially surprised that the difference between the top and the bottom of the hives tested was but two degrees in most cases. I could not help wishing that the temperature of an insulated hive with a large and a small entrance could have been made, that we might know how much heat is lost in that way. If the Fahrenheit scale of temperature had been used instead of Centigrade, the tables would have been more readily understood by many of us plain beekeepers.

* * *

The market reports for the month of August do not indicate a large crop in the country as a whole, and, if the beekeepers are patient and willing to take the advice given in the September issue of Gleanings, there seems no good reason why we may not obtain very satisfactory prices. The greater abundance of honey, with lower prices, is bringing it into more general use. As its value as a food becomes better known, we need not worry about the future market. If we are not satisfied with the wholesale prices, it is every one's privilege to retail his crop for a higher price.

* * *

The advice given by E. R. Root, pages 575 and 576, on shipping comb honey, is both timely and important, especially for the inexperienced beekeeper. We have been using a crate holding only six cases, as eight cases make a crate pretty heavy to handle in loading and unloading into a truck or wagon and into and out of cars. Unless those who handle freight are more careful than their reputation calls for, I fear crates weighing 200 pounds would be mostly moved by station trucks. The only objection to the six-case crates is that it costs about 30 per cent more to use them. We use also many two-case crates to ship to those retail grocers who can use but a small amount at once.

The article by H. H. Root, page 568, on "Merchandising Honey," and another by E. G. LeStourgeon, page 573, on the "Marketing Problem," contain many points and advice of great value about marketing honey. Mr. LeStourgeon says, "Honey has never been over-produced but has been under-distributed," which is undoubtedly true. It should be held as an everyday article of food rather than a luxury. If we compare the price with that of other articles of food, we shall find honey as cheap at the present time as any of them or at least the average of them.

* * *

It seems a pity for beekeepers to rush their product on to the early market at any price they may be able to get. Fifty years ago we did not think of selling honey before October. October and November were the honey months. Not until we began to get frosty weather was there much call for honey. Now there is more or less call for it the year round, the greatest demand coming during the cool months, as fruits are plentiful during the warm parts of the year.

* * *

One large producer told me last fall that he found his neighbor selling his crop of comb honey for five cents a pound, when he himself was trying to sell his for three or four times as much. I see no other way but for the larger and more intelligent producers to educate these "side line" beekeepers as best they can or buy them out.

* * *

I was surprised to learn (page 586) from Mrs. Boyden that the tomatoes were not ripening earlier in southern California than in Ohio. This means that the spring and early summer in that favored climate are no warmer than in the East.

* * *

I confess a feeling of envy when I read of the abundance and variety of fruits grown in southern California, as described by Mrs. Boyden; but I console myself by saying, "Life consisteth not in the abundance of the things one possesseth." We have enough here for our health. Surely, what more can one ask for?"

* * *

That is a capital idea of the extension service of Iowa to furnish better queens for the beekeepers of the state. I never before realized, as I have during last year, the value of gentle as well as productive bees—a yard where I can walk around among the hives without the slightest fear of a sting.

OUR CALIFORNIA LETTER

CONSTANCE ROOT BOYDEN

(Stancy Puerden)

WHEN a man's work is in a city office and requires him to meet people and talk with them almost constantly during the day, while his wife's work is in the home where she meets almost no one during the same time, it is a problem to know how to spend their evenings in a way that will afford both of them rest and recreation. The natural inclination of the man is to spend his evenings very quietly at home. But his wife, after a busy morning at housework, a little rest in the afternoon, then dinner and the inevitable dishes, often feels an inclination to get away for a little while at least. Perhaps this is especially true of a woman who is 3000 miles away from her old friends and acquaintances in the East.

I don't know how other people solve this problem. Perhaps other women are contented to spend their evenings at home; but this is such an interesting world, especially here in southern California, and life is very short. We compromise. About once a week the children and I attend a show, leaving the busy man to keep house alone for a little while. He claims he enjoys it. Other evenings we try to return calls which were made on both of us, and we frequently drive for short distances. When a man has to drive eighteen or more miles a day going to and from his office, naturally he is not keen on much driving for recreation. Some evenings we all spend quietly at home.

But one of the most delightful compromises, in my favor, was when the busy man took his family to a symphony concert in the Hollywood Bowl. It was dark when we reached Hollywood, which is some twelve miles from the suburb where we live, and we were directed to take a road which led straight up toward the mountains back of the town. But, like all such roads, instead of coming up against the base of the mountains the latter seemed to open and reveal a canyon road, up which we climbed until a sudden sharp turn up a steeper grade brought us into the great natural amphitheater which is the "Bowl." A young man with tickets and parking tickets appeared at the side of the machine, other young men at intervals directed us where to go, and presently we left the car and climbed to seats arranged in an enormous semicircle up the sides of the Bowl. The large, open front stage seemed rather distant, and I was afraid the music would be somewhat faint. But it was beautiful; the softest, sweetest notes of a solo violin were distinct, and the music as a whole sounded as fine as anything of the kind I have ever heard indoors. And the men of the party, who climbed to the highest seats during an intermission, said the effect was even finer up there, although they were far away up the great hillside.

During the numbers the few lights were turned off, except on the stage. Facing the north we could see the Big Dipper and North Star, and early in the evening, the four great planets which make this summer's sky so interesting; but Jupiter, Saturn and Venus soon sank behind the western ridge. High on a hill to the east blazed a great white cross, marking a neighboring canyon in which the Pilgrimage Play is being given nightly. That play, you may know, is on the life of Christ, our American Oberammergau.

The great audience listening to the symphony orchestra was perfectly quiet and orderly, so quiet that all the little night sounds, crickets, etc., could plainly be heard near us when the orchestra was playing softly. Fortunately the noisy, night-singing mocking birds have subsided for the season. Anyone who "views with alarm" the tendency of this generation toward fast living and "jazz" should be comforted by a visit to a symphony concert in the Hollywood Bowl, for it was plain to see that the large audience, among whom were many young people, enthusiastically enjoyed the good music. And one of the fine features of these concerts is the fact that the price of them is so moderate that they are within the reach of anyone who can afford a picture show.

Some time I hope there will be a compromise which will take us to the Pilgrimage Play. One of the charms of "My California" is its climate, which permits an audience to enjoy concerts, plays and grand opera in God's out-of-doors. It is true, summer evenings in the East are plenty warm enough for out-of-door functions, but the possibility of rain makes it hazardous to risk money on such enterprises, a possibility which does not have to be taken into account here.

Next time we attend an out-of-door concert, however, we are going with plenty of warm wraps. It had been a warm day, and most of our party carelessly started out with light coats and shivered throughout the evening in consequence. With warmer coats we should have been perfectly comfortable.

ONE warm August day the busy man had to go on a long motor trip to visit a number of apiaries, and just a little while before it was time to start he announced that I was going along. To tell the truth, I was not so eager for the trip as I might have been if the sun had seemed a little more merciful; but, having said so much about wanting to see more of the country, I couldn't well refuse.

A nice gentleman with a comfortable car picked me up here at home, drove clear down to the city for the busy man, who had gone to the office for two or three hours' work, drove across the city to Hollywood to pick up another interested man, then on through Eagle Rock City to Altadena where we stopped at an apiary to ascertain what its inhabitants thought of aluminum honeycomb. I did not participate in the intrusion into the private habitations of the bees, nor did the supposedly interested gentleman we picked up in Hollywood. Instead he stole a couple of peaches (at least, I did not see him pay for them), presented me with one and retired behind the trunk of a large eucalyptus tree to enjoy his peach and permit me to do the same with my share of the stolen goods.

A California peach, unless peeled and sliced into a plate and eaten with a fork, should be enjoyed in private, for it is the largest, juiciest and finest-flavored article of the name I have ever eaten. And don't jump to the conclusion that the juice is a product of copious irrigation, for I believe the latest way is not to irrigate such fruits, but to depend upon cultivation to conserve the moisture of the soil. Although I have lived near the peach belt of Lake Erie all my life heretofore, I must admit that I never realized how fine a peach could be until this summer in California. Our peach tree, within a few feet of me where I am writing, is so loaded with luscious fruit that in spite of many stout props it resembles a weeping willow. And I just stepped over to it, selected a great red-cheeked, golden peach, washed it and ate it, and it was even finer than the stolen Altadena peach. That peach tree is conspiring with the nectarine tree near it to give me many warm hours of canning, for their fruits are ripening together.

Speaking of California fruits, not even a glowing seed catalog description could do justice to the cantaloupes, Casabas and honeydew melons.

To be strictly honest and to prove that I am unprejudiced, let me confess that I do not think such grapes as the Delaware, Niagara, Concord and Catawba are quite as large and fine here as in the East, although they are very good. And tomatoes are a disappointment. Having read that tomatoes are a tropical vegetable, I supposed they would do wonders in this so-called semitropical state. What was my surprise, therefore, to find that tomatoes have developed temperament in this locality. They blight on the slightest provocation, they run to leaves if you irrigate them, and sulk and bear small tomatoes if you don't. It isn't strange that the price of tomatoes continues ridiculously high for the time of year.

To return to Altadena, when I had finished the peach I washed my juicy fingers in a trough where some young Thanksgiving diners were drinking, joined the other members of the party who had finished their investigations and we drove on down to Pasadena for lunch.

After lunch we drove over Devil's Gate dam through Flintridge to La Canada Valley through to Sunland and across the desert country beyond where one has a fine view of the gorgeously colored mountains. On our way to San Fernando we passed a large commercial rose farm with its thousands of blooming roses, two great reservoirs in which the Los Angeles city water is stored, saw the large aqueducts and the open aqueduct in which the water is aerated as it pours down over a hill, and passed the largest olive ranch in the world. Then we went on through Newhall tunnel into a hot, largely desert valley to Saugus and beyond to the Mint Canyon road. It always impresses me with the foresight of the Californians to ride over such perfect roads as cross these desert valleys.

We stopped at the homes of several beekeepers. Don't expect me to tell you about what our party found in reference to the aluminum combs, for I should speedily get beyond my depth; but I believe they found these particular bees gracefully accepting the short cut and their keepers well satisfied.

Those hot valleys, cut off from the cooling ocean breezes by mountain ranges, are interesting and full of possibilities for those who can stand the climate; but the country around Los Angeles never looked more beautiful to us than when we finally came back to it with its green trees, its many blossoming trees (the trees of July with their blue violet-like blossoms are gone, but there are many other trees with bright blossoms now), its flowers and fruits, beautiful homes and cool ocean breezes. It is true we have our hot days, and perhaps I shouldn't mention it, but we did have four or five warm nights in succession, regular corn-growing nights. But any old Californian will tell you that those nights were very, very unusual: in fact, it almost never happened before, and between you and me, there is one eight months' old Californian whō hopes it will never happen again. But the warm nights of this summer have been so few that we may call them the exception that proves the rule.

Little Cocoanut Cakes.

¼ cup margarin or butter or a mixture of both
1 cup granulated sugar
2 eggs
Milk
About 1½ cups sifted pastry flour
3 teaspoons baking powder
½ teaspoon salt
1 teaspoon vanilla

Measure the margarin by filling a measuring cup ¾ full of water and adding the margarin until full. Cream the margarin and sugar until smooth. Break the eggs in a measuring cup, break up with a fork and add milk until the cup is full. Then add to the first mixture a little of the egg and milk mixture and a little of the flour, beat until smooth and repeat until all of both are used. Add flavor and beat vigorously for one minute and bake in 20 small muffin pans which have been well greased and lightly dusted with flour. They should bake in 10 to 15 minutes. Cover with steamed frosting sprinkled liberally with cocoanut.

Beekeeping as a Side Line

Grace Allen

IT was in December, 1919, that I asked a question in Gleanings that no one answered. I had become enamored of the old English 18th century scholar and naturalist, Gilbert White, of Selborne, who in one of his letters refutes the assertion of Vergil—"a strange notion," as he scornfully calls it—that echoes are harmful to bees; and, in partial support of his own position, affirms that "bees, in good summers, thrive well in my outlet, where the echoes are very strong." Which established him as a sideline beekeeper, and landed him squarely in this department, where, in his very own words, we caught that delightful picture of the lovable old Oxford scholar testing the hearing of his own bees "with a large speaking-trumpet, held close to their hives, and with such an exertion of voice as would have hailed a ship at the distance of a mile!"

My own enthusiastic interest was by no means limited to his few references to bees, but responded—whose would not?—to the whole range of his countless rich notes, charming comments and wealth of quiet incidents, with the conclusions that "a person with a thinking turn of mind" might derive therefrom. Everything that came and went in the parish of Selborne was observed by his quick eye and set down in his letters, so quaint in the antique manner of his gracefully formal style. Through these letters one sees and hears the coming of the English birds—swallows and swifts and martins and starlings, the cuckoo and the curlew and the "tame brown owl," the larks and nightingales and a host of lovely others; there are trees, elms and great oaks, pollard-ash and "wych hazel," "Portugal laurels and American junipers"; there are rocks and lizards, gipsies and echoes and wonderful cobwebs, frosts and storms and "the rushing and roaring of the hail"; there are simple pictures, such as the one of good Queen Anne, stopping "as she was journeying on the Portsmouth Road . . . and reposing herself on a bank smoothed for the purpose . . . still called Queen's-bank," to view a great herd of 500 red deer, "brought by the keepers along the vale before her." It is the kind of book one browses through, lingeringly, nibbling delicious bits all along the way.

But the only letters I quoted from in Gleanings were two containing references to bees. One of these, copied entire, was about an idiot boy whose life in winter was passed in almost complete lethargy by his father's fireside, but who in summer waked up, as it were, and became keenly interested in bees. A strange, distorted interest it was, of course, poor boy, manifesting itself in various abnormal ways: seizing them bare-handed (*nudis manibus*, says the old Latin scholar) and sucking their bodies for the sake of the honey sac; putting them in bottles or even inside his own clothes; slipping into apiaries and there sitting down in front of hives to tap with his fingers and catch the bees as they came out; even turning the hives over, sometimes, to get the honey; his lips making a humming noise like a bee as he ran about.

Toward the end of the letter, before the concluding statement of the boy's death before maturity, White says, in effect, that if the poor little bee lover had been smart, he might have been as great a beekeeper as any of the moderns who made people wonder at their feats with bees. (But O the old fashioned saying of it that was his!) And he ended thus: "and we may justly say of him now,

. . . . "Thou,
Had thy presiding star propitious shone,
Should'st Wildman be." . . . .

In spite of the painfully unmusical combination, *propitious shone* (especially followed by *should'st*), these lines interested me greatly; the thing that puzzled me chiefly that uninformed day when I copied the letter for Gleanings was—who was Wildman? Then, too, from what poem or poet was the extract quoted? So I asked if anyone could enlighten me as to those lines. No one did. Now I can answer part of my own question. Though I don't yet know where the extract comes from—White himself quotes it. Who first wrote those words, I wonder, and to whom?

In a very modern manilla envelope, postmarked in a very modern city, there comes to me occasionally—and by the same token must come to other lovers of bees and books—a list of old bee books. "Old-Time Bee Books—Rare and Interesting," reads the too alluring heading. The authors' names run alphabetically, from Adair to Worlidge. Third and fourth from the last are two Wildmans, Daniel and Thomas. They were contemporaries of White's. They published in London, and perhaps lived near there, while Selborne was only 50 miles away. The Selborne naturalist may have known them personally; at least, he must have known their books and somewhat of their work and rank. So I feel sure that I understand the name Wildman in the lines that Gilbert White quoted in 1775 to his friend the Honorable Daines Barrington, in his letter about the poor bee-loving idiot boy.

The first edition of Thomas Wildman's book, "A Treatise on the Management of Bees," was published in London in 1768.

The particular copy offered in the modern list of Old Time Bee Books bears the bookplate of John Phin—which starts our wonder again as to Mr. Phin! Was he a lover of books or a lover of bees? Was he—ah, what mightn't he have been! Anyway he had a library with a book in it about bees—he must have been something very likable.

The 12th edition of Daniel Wildman's work, "A Complete Guide for the Management of Bees Throughout the Year," was published in London in 1792 (the year Gilbert White died); bound in one volume with "Hints for Promoting a Bee Society." I do wonder if they promoted it! And had conventions! And field meets! And short courses! The particular copy listed has the book-label of—mark you—Bernard Edward, Duke of Norfolk, a lover, perhaps, of both books and bees. Surely his library was oak-panelled, the halls leading to it were hung with portraits of ancestral dukes and duchesses in ruffs and powdered wigs; and somewhere among the hedgerows and climbing roses of his Park were picturesque bee skeps—perhaps with primroses and English may blooming near, or the hawthorn dashing dews over them from its white blossom sprays. And he had Wildman's book on bees in his ducal library.

Ah, the poor idiot boy, who under a luckier star, more propitious in its shining, might have been a very Wildman!—with his Treatise on Bees, or his Guide to their Management listed in later centuries among Old-Time Bee Books—Rare and Interesting!—casting a glamour over dead unknown men merely because their bookplates were on the inner covers!

That List.

It is a thing of fascination, a thing of great temptation. How can one be a lover of "The Amenities of Book Collecting," without harboring the secret longing to do some wee bit collecting oneself? Then here comes this especial list, sent direct into one's hands, to lie day after day on one's red-topped writing table, finally pushed sternly out of sight under a heap of unanswered letters, so that it may not be found for a long, long time, perhaps never. But because one never forgets where he hides a thing from himself, it is forever getting itself pushed out in plain sight, to tease and tempt, yet somehow never to land in the waste-paper basket, as it ought.

Yes, surely that Bernard Edward, Duke of Norfolk, must have been a lover of bees as well as of books, for that famous old book, "The Feminine Monarchie; Or, The Historie of Bees," by Charles Butler, 1623, bears this same book-label. Ah, that must be the great book. Do you remember how the Beekeeper's Wife (Gleanings, 1917) wrote about it in one of those letters that we all enjoyed the more because we knew who wrote them? Some day maybe I'll go visiting Rob's library there in—you know where—and beg the loan of his copy for an hour or so, to read its quaint old pages for myself. "In a word, thou must be chaste, cleanly, sweet, sober, quiet and familiar so they will love thee, and know thee from all others."

Then there is "Systema Agriculturae"—with a section devoted to bees, 1681—with a bookplate of Sir Something or Other. Can't you just see the scholarly Worlidge writing it all down with his quill pen? And there's Moses Rusden's "A Further Discovery of Bees," 1679. "Rob" has Moses Rusden, "Bee-Mafter to the King's moft excellent Majefty." He is that away-before-his-time beekeeper, who denied so many "falfe proverbial fayings about bees. There are a dozen or more printed in the 17-hundreds—that sounds further back than the 18th century, doesn't it?—besides those by the Wildmans. The very titles are alluring—"The True Amazons"—"The Female Monarchy"—"A Theatre of Politicall Flying Insects"—"The Compleat Bee-Master"—"The Antient Bee Master's Farewell." No, I am not advertising them, I am only enjoying them by the title method. And I am folding the list away, putting it back under the pile of unanswered letters that it may not tempt me again for a long, long time. And I am putting away, too, "The Natural History of Selborne," in its place in the bookcase, between "The Republic" of Plato and "The Fall of the Nibelungs." For even more enthralling than any list could be are the glowing pages of a real book—a live book—albeit a gentle mild one, like Gilbert's White's. Which is why it takes so long for some of us to verify quotations, or turn an idle page, or dust books. Did you ever try dusting them? Don't, if you would make an early end to your dusting.

It Will Not Do.

When some swift day piles task on task
And, bowing, hands them all to you
Who did not ask
Nor in the least desire the gift
It will not do
To let your littlest finger lift
One page of the one old book, on fire
With noble charm or high desire—
It will not do.
(Ah me, how sadly well I know
It will not do!)

For when sorcery has bound you,
Helpless, where the first page found you,
And you drift beneath old magic
Down the beauty-haunted hours
Of woven spells and ancient powers—
Ah, the end it is so tragic!

For every task in every pile
At last will squirm and raise its head
And smile a demon sort of smile
That fills your soul with sudden dread
And tightens something round your heart,
Something sick and cold,
And tears your conscience all apart
And makes you feel all tired and old,
And freezes all your hot replies
By looking at you with its eyes,
Horrid eyes that mock at you
Ah no!—it will not do!

FROM NORTH, EAST, WEST AND SOUTH

In Southern California.—Honey has been moving quite freely since my last letter was written. The orange honey has been bringing nine cents, white sage eight cents, and the darker grades as low as six cents. At the present writing (Sept. 4) buyers are not anxious to buy, as the shipping conditions are so unsatisfactory that it makes it very uncertain as to how long their money will be tied up in the transaction. Few, if any, are buying for speculation, and unless they have orders or are reasonably sure of moving the honey on to the market in a short time, they do not care to buy excepting at a very attractive price. A few beekeepers are holding with hopes of better prices later, but most of them are ready to sell when the crop is ready, being satisfied to let the other fellow do the speculating.

When I read the editorial on page 507 of the August Gleanings on ''Inferior Stock Reduces Value of Comb Honey,'' I could not help but wonder if the same would not apply to extracted honey. The word ''value,'' however, would be applied to the quantity rather than to the quality of the honey. The propolizing tendency applies more generally to both than is at first supposed. Especially is this true if the capping melter is used. This colored material when heated has quite a tendency to discolor the honey with which it comes in contact. Hustlers, of course, we want in either case. Comb-builders, whether their product is white or watery, do not interest us who produce extracted honey, just as long as they keep busy capping. Finishing is also of minor consequence, as 75 per cent of the comb is all that is necessary to be capped. Travel-stains we do not like; but, if the honey is taken off when it should be, little or no trouble will come from that source.

Most beekeepers have made some increase. We all like to have enough new colonies at the close of the season to make it reasonably sure that we shall come through the winter with enough colonies to ''keep our numbers good,'' as the beekeepers say. Many decoys have been set out this year, but the swarming has not been so general as in some seasons. Consequently, many boxes are still vacant.

Queens can be raised and increase made quite late in southern California. Opinions differ as to the value of fall or spring increase. If you have plenty of stores, it might be well to make some increase yet this fall. I have had very good results as late as November, and queens have been known to mate every month in the year in southern California.

It is well to get all combs and wax taken care of, as the wax moth is a busy fellow during the fall months and, if given a chance, will soon destroy many dollars worth of valuable material.

These items are being written at Idyllwild, a mountain resort 5,000 feet up on the slopes of Mt. San Jacinto, where I have just erected a mountain cabin. The Andrews expect to spend many vacations here, and hope that their friends will always find that the ''latch string hangs outside the door.'' Yesterday we enjoyed a hike to the lookout on top of Tahquitz Peak, at an elevation of 9,000 feet. There is an old Indian tradition that says that this mountain always gives out rumbling noises before there is to be an earthquake. Quite a number of earthquakes have occurred in this section since the memory of man, and perhaps more will occur in the future. Little or no thought is given to them, and in many cases they are looked upon as an experience to be proud of rather than to be regretted. Some property damage has resulted in the past, but scarcely any loss of life has occurred.

People who have never enjoyed the view to be seen from one of these mountain tops little realize just what it is. As I turned from point to point of the compass, I could see the great Pacific Ocean, Catalina Island, Los Angeles, Mount Wilson, Mount San Gorgonia and Salton Sea, with the numerous valleys and cities lying between.

I have observed bees around the cabin and will try to locate them some day, as I can hear of none being kept around the settlement. L. L. Andrews.

Corona, Cal.

* * *

In Arizona.—The summer season in southern Arizona has not been a favorable one for honey production. Following a spring season which seems to have been very variable in the different valleys of the state, the summer seems to have been uniformly poor. Although the July and August rains have been about normal. mesquite has almost wholly failed to bloom again. In fact, the number of trees that may be seen with even a few blossoms is so small as to mean nothing to the beekeeper, while in covering perhaps 100 miles of country roads I have seen just one mesquite bearing sufficient bloom to be conspicuous. Of other flowers from which the bees may so much as draw a living, there are practically none.

Occasional areas of alkali weed are in luxuriant bloom. This provides a surplus of dark, poorly flavored honey for the colonies which may chance to be located near by, useless for commercial purposes but valuable for winter stores. This plant grows densely in favorable areas but is wholly lacking in large areas, so not all apiaries will benefit by it.

Those beekeepers who are located so as to draw upon such cultivated crops as alfalfa and cotton are reported as securing light to fair crops, cotton especially not yielding as well as usual. In addition to this, the cotton acreage has been greatly reduced as compared with two and three years ago. The entire honey crop for this year in this region, judging from reports reaching me, will hardly reach 75 per cent of normal, and may be even much less than that.

I have been fortunate enough to have an opportunity to locate a few colonies near a considerable acreage (20 acres) of Hubam clover this summer. This is the first sowing of this plant on a commercial scale in the Tucson region, if not the first in the whole of southern Arizona. A fair surplus is being secured, though not so much as was anticipated. Chas. T. Vorhies.

Tucson, Ariz.

* * *

In Colorado.—Colorado has a crop about the average in most sections, except a few places where hail destroyed the alfalfa and sweet clover blossoms. The first main flow came on early and heavy. Some beekeepers were not prepared to gather this crop, and lost some honey that way. The farmers were rushed and so did not cut the hay as early as usual, and this helped the beekeepers. The second and third flows were not very good, the greatest part of the crop coming during the first flow.

There seems to be considerable price-cutting among some of the large beekeepers as well as the small ones. Honey is retailing in some sections at a wholesale price, and in others at wholesale prices plus price of the container, and then beekeepers wonder why the wholesale price is not better. Some are offering No. 1 comb at prices that are much less than it cost to produce. However, all beekeepers do not do that. As an example, we have one man that sells his entire crop at a good retail price by investing a little money in advertising and putting up a good article in a neat package.

This year we tried out some demonstration apiaries as an experiment, which gave good results. Next year we hope to put in more of these.

We have had some European foul brood this season in the Arkansas Valley. This was shipped in from another state. However, I feel it can be easily controlled in the alfalfa region. Newton Boggs.

Ft. Collins, Colo.

* * *

In Indiana.—With an all-summer drought, broken only by a few local showers, the crop of clover honey in northwestern Indiana probably will be less than 50 per cent of normal. In July and the forepart of August strong colonies consumed large quantities of honey already stored, and, where extracting had been done, some were found to be in a starving condition. In low places and along marshes there is a considerable amount of heartease and goldenrod. In fact, bees along the Kankakee and Calumet river bottoms are doing exceptionally well, and the fall crop apparently will be above normal.

Honey is moving very much more slowly than is usual at this time of the year. It probably is due to warm weather, strike conditions and to the great abundance of fruit of all kinds. More honey is produced hereabouts than can be disposed of locally. Most of it is amber in color, and at present prices it does not pay to ship to wholesale markets. Some means must be found to increase sales, or producers must necessarily curtail production.

About 20 or more Federal Board students at Valparaiso University are taking a course in beekeeping. These students come from various parts of the United States. C. J. Borum is in charge of the beekeeping work.

Valparaiso, Ind. E. S. Miller.

* * *

In Iowa. We are having intensely hot and dry weather at this writing (August 6) and while the bees are doing fairly well under these conditions, it will not last long if we do not get rain. Our main fall flow is from heartsease, which, although yielding immensely under favorable conditions, cannot stand these hot days long without rain.

Beekeepers should take warning that an unusual condition of the colonies exists this fall, and they should keep a close watch on the brood-nests or many colonies will go into winter quarters with little or no stores.

We have had a very light flow all through August. In fact, there has been no time since the main clover flow was over that the bees did not get a little nectar from the fields, just enough to stimulate brood-rearing; and all through August the brood-nests were bare of honey, but brood in almost every frame. Never did I see the brood-nests so full of brood at the beginning of the fall honey flow. With these conditions it is hardly possible for much honey to be stored for winter stores; as with the fall flow now on the queens are more than likely to continue to lay, perhaps more rapidly because the flow is better, and it is probable that when the flow is over an empty brood-nest will be the result. It is a condition one does not like; however, it means plenty of young bees for winter, which is one thing decidedly in its favor.

Comb-honey producers do not usually have to worry much about colonies being short of stores, but in the colonies we run for comb the same conditions are present. Our comb-honey colonies are in eight-frame hives and have eight frames of brood; so better keep a close watch on all colonies. Hunt up the feeders, and see that there are no leaky ones unless you have plenty of full combs. A writer of my acquaintance once said that cigarets and an automobile are two good things for a boy to raise the devil with, and he might have added a leaky feeder.

The bees are in good condition so far as strength is concerned, and all they will need is to make sure of plenty of stores of good quality with the proper protection.

Center Junction, Ia. W. S. Pangburn.

* * *

In Alabama.—The season just passed has been the worst all around of any that we have had for many years. The weather in January and February was so warm that the bees consumed enormous quantities of stores, causing a shortage of package bees. The colonies were more or less run down at the beginning of the honey flow.

During the early part of the honey flow there was rain every day, but on June 4 it quit raining and turned so hot and dry that the nectar dried up in the flowers. Some bees will need feeding for winter.

The annual convention of the Alabama Beekeepers' Association was held in Montgomery on August 23; officers were elected and an interesting program rendered. A reward of $50.00 was offered by the association for the arrest and conviction of anyone stealing bees from the members of the association.

The fall flow seems to be the best of the year, as the bees are working fine every morning, making conditions better for requeening than in most years.

Montgomery, Ala. J. M. Cutts.

* * *

In Ontario. No report from Ontario in last issue of Gleanings does not necessarily mean that there has been nothing doing in beekeeping in that province worth reporting. But it does mean that the writer of these notes has, in common with scores of other beekeepers, been very, very busy. While many parts of the province have been blessed with good crops of honey, other factors that have come into prominence during the past few years have made the honey season a more strenuous one than usual, aside from the matter of the size of the crop. Chief among these factors here in our home section is the growing of sweet clover. Formerly, when alsike clover was our only source of white honey, the honey flow would be over by about July 10 or 20 at the latest, and we had ample time, by hustling a bit, to get the white honey off before buckwheat came in. Now, with sweet clover following the close of the alsike honey flow, there is no let-up, and the white honey flow merges right in with the buckwheat honey flow. This season by using a large number of escape-boards we were able to keep some 20,000 pounds of clover honey from getting mixed with buckwheat; but it meant a tremendous amount of work, and this work had to be done in a hurry. While we lost quite a lot of buckwheat honey by colonies becoming jammed before we could get the clover honey off and sufficient empty supers given; yet in the end we gained a good deal by this manipulation, since it was a case of handling less honey for more money. A few thousand pounds of buckwheat honey were better lost than to have ten tons of clover classed as buckwheat, and then get a little more buckwheat.

This is the third year that sufficient sweet clover has been grown in our locality to mean anything, one way or another, to the commercial beekeepers. During two seasons of the three it has yielded honey freely, while in the other year it yielded very little. The year of failure was hot and rather dry, while the years of plenty were cool and wet during the time of the honey flow. Sweet clover will yield best in comparatively cool and damp weather, when under similar weather conditions alsike will not yield at all. On the other hand, alsike will yield well in hot dry weather when sweet clover will yield little if any nectar. With the two clovers in the same section, one is almost sure of a fair yield from each or both, and that is the only redeeming feature, as I see it, in the growing of sweet clover in a section like ours; for, as more than once stated in these columns, alsike clover will not be grown for seed for a number of years on ground that has produced sweet clover seed. But the boom of sweet clover is already waning in our locality, and, aside from growing it for pasture, I do not think we shall long have this plant as a honey plant in our immediate vicinity.

While, as already stated, Ontario has a nice crop of honey, yet the size of the crop does not justify the panicky condition that many beekeepers have been stricken with, and as a consequence have thrown their honey on the market at any price almost that the buyer would pay for it. Unscrupulous dealers have taken full advantage of this attitude, and today the market in some centers is paralyzed, so far as making large sales is concerned. The great abundance of all kinds of fruit has been a factor in slowing up local sales of honey, and there is no question but that conditions will be better after this surplus of fruit is disposed of. Tender fruit must be sold at once—honey will keep, and that is one thing in favor of our product as compared with many other lines.

Many beekeepers who recently started in

FROM NORTH, EAST, WEST AND SOUTH

the business have no regular markets worked up for their product, but during the past few years this was not noticed so much when honey could be sold almost anywhere and almost at any fair figure asked. This year it is different, and honey has been "dumped" freely. But it is not only the new men in the game that have done this. I am creditably informed of at least one extensive producer who has been delivering all over the country by truck, at a price less by two cents than many of us sold for in carlots. However, the present state of affairs may work out all right in the end, for although much work has been done by our association in buying supplies nothing has been done in the matter of selling the crop co-operatively. This may be a means of drawing the producers together so that, when the crop is good, it may be intelligently distributed instead of having large lots dumped at some centers while others go bare, as is the case today.

Buckwheat has given a larger surplus than usual, at least in some localities. In two of our beekeeping centers there is no buckwheat, but here at home there is a large acreage and the crop has been good. Bees are in good condition for winter as to population, but much feeding will have to be done since the brood-chambers are none too heavy. Alsike prospects are good for another year, as the spring "catch" is good and the new clover is blooming in stubble fields. J. L. Byer.

Markham, Ont.

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In Idaho.—The season of 1922 will be remembered as one of extremes, in the territory covered by the Idaho-Oregon Honey Producers' Association, for, even in localities not many miles apart, conditions have varied to an unusual degree.

During the spring-breeding period conditions were generally quite favorable; but when June came with its alfalfa bloom, supplemented by the various clovers, in some of our ranges in some localities bees made a bare living if that, though there seemed to be a fair flow of nectar, which proved to be mostly water.

Naturally, in the ranges where little or no surplus was secured, there was practically no swarming except with occasional supersedure colonies; while in other districts, not 40 miles away, there was a good flow of nectar, with universal preparation for swarming. To such an extent did this swarming fever extend that not nearly so large a crop was harvested from the June flow as might have been taken, if the colonies had early abandoned swarming. Demareeing in the usual way only aggravated the difficulty, if the beekeeper did not arrive for the next examination before the possibility of young queens emerging in the brood placed above the excluder.

[Was the brood placed immediately above the excluder or on top of the supers? In the East there is apparently no trouble from swarming when the young queens emerge, provided there are at least two standard-depth supers between the brood-chamber below and the brood raised above.—Editor.]

In this connection, it seems that more of our own producers are planning a more or less complete abandonment of orthodox Demareeing and other methods of raising brood above excluders, and falling back on the establishment and maintaining of a single brood-chamber for each colony. After June it is rare for colonies in our ranges to swarm, no matter how good the honey flow, and if cells are destroyed in a single-story brood-chamber there is less labor expended than with most of the other plans, and no more swarming. Where there may be a later flow, as from our second crop of alfalfa, such queens, held down to a single story, probably "hold up" in their laying better than would be the case if they had been permitted almost to exhaust their fertility by laying freely in two or more stories.

With the coming of the honey flow from the second crop of alfalfa, again conditions varied exceedingly. In our own apiaries, none of them over 15 miles from home, there was not a day when bees would not rob if given the opportunity. At no time was the honey flow heavy, though the best colonies gave a very good account of themselves.

Nuclei, even though helped with frames of emerging brood, were slow to build up. Demareed colonies did not fill the lower story with brood; but, after the bees had all emerged from the brood placed above the excluder in June, they dwindled down and were in very unsatisfactory condition. In other districts there were a few days of very heavy honey flow, and quite generally cans and cases were ordered far in excess of the actual need.

Quite generally little or no increase was made. With the prices for honey prevailing for the past two years and continuing high prices of most of our needs, there is no incentive for increasing our investment in bees, as it is apparent that only those who operate so few bees as to do nearly all their own work are finding the business remunerative.

Market conditions remain unsatisfactory, with few sales, though fortunately there is but little old honey remaining unsold.

Colonies, so far as reported, are quite generally going into winter in good condition, though the later light flows have been disappointing. It may be, with our usual warm days and cool nights prevailing for weeks at a time, that stores will be very seriously depleted, especially since not five per cent of the colonies in the district will be packed for winter, owing to the high cost of protection and the uncertainty of the benefits accruing. E. F. Atwater.

Meridian, Idaho.

* * *

In Porto Rico.—Having just returned from a couple of trips to my out-apiaries, some of the conditions I found may be interesting to the northern beekeeper. I have mentioned before some of the very unusual conditions one meets with in this small island less than 100 miles long by 30 broad, containing only some 3,600 square miles of territory. The north side of the island is green with thrifty vegetation. This condition continues past Aibonito where I started and for about 4 miles beyond, which is the top of the divide. From there one starts down the southern side. From this point there is a drop of 1,500 feet in about 5 miles of road. There is a double figure ''S'' curve and several singles in this stretch of road. Many people become car-sick when traveling this hill country, on account of the turns and twists. For instance, there are 21 turns in one-half mile of road just beyond my home, one of these being a hairpin curve. This is not at all unusual. From the divide for a distance of 25 miles the contour of the country presents a dry, burned-up appearance, the ground being bare of growing vegetation, with the exception of trees and large shrubs. Hardly a blade of green grass is to be seen. Many of the trees have shed their leaves like winter conditions in the North. I later reached the irrigated lands of the coast where all was green again.

A week later I made this same trip to the town of Ponce, and, as there had been a fair rainfall three days before, the dry, arid look had passed, and all over the hills and valleys there was a discernible sheen of green of the new grass growing with wonderful rapidity. This revival of life, or the start of new life, is even a more wonderful demonstration of creation than any of our northern springs. It takes on more the character of a miracle, as it occurs in so short a time.

As the road I was to take from Ponce was impassable for an auto, I took a horse. When I reached the apiary an hour later, I was pleased to find honey coming in, and the stronger hives already storing in the supers.

To reach my apiaries near the western coast I took the train from Ponce to Aguadilla, and from that town by auto a distance of 10 miles. Located along this road I have three apiaries, which are cared for by a native worker. However, it takes close inspection trips to get anything accomplished. All peoples native to the tropics are blessed from their point of view (but condemned by the northern idea) by the habit of ''manana,'' which means tomorrow. All things can be accomplished ''manana.'' In these apiaries I found no honey coming in, but a prospect of a good honey flow three or four weeks distant. This latter trip occupied four days, as there was so much delay in making connections.

It is expected that there will be a slightly heavier yield of honey in Porto Rico this year than was gathered in 1921.

Aibonito, Porto Rico. Penn G. Snyder.

Field meeting New Jersey State Beekeepers' Association. E. G. Carr, Secretary, speaking.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Three Wintering Commandments. I live only 10 miles from the late Dr. Miller's home, Marengo, Ill., and have the same conditions for beekeeping that he had, although I find I have better results (so far at least) in wintering by outdoor wintering, with good packing and plenty of stores, than he did in the cellar. I find that brood-rearing begins two or three weeks earlier than in cellar-wintering, and I have the colonies strong in two stories when the white clover honey flow opens about June first.

As I see the situation, there are just three essential things to abide by, namely: Plenty of winter stores, not less than one and one-half stories; a good young queen, preferably introduced after the main flow of June-July; good packing put on early and left on until the latter part of April or the first of May. I wintered 100 per cent of my bees the past winter while nearly all the other bees in this locality died from want of the above-mentioned essentials.

Woodstock, Ill. George A. Turner.

* * *

Apiary Rid of American Foul Brood. In June Gleanings I see H. L. McMurry says that no one has ever, to his knowledge, been able to free his apiary of American foul brood. Last year I found this disease in four colonies very late in the season. I was running for extracted honey and had over 100 combs infected or that had been exposed to infection. I shook the bees on to full sheets of foundation, destroyed more than 100 combs by melting and scorched all hives and supers with a gas jet. I put the frames into the oven of the cookstove and heated them until they were ready to blaze. This warped them somewhat, but I lost only a few. As it was quite late in the season I fed thin syrup several weeks, and in October gave each colony about 25 pounds of thick syrup. All came through the winter in good condition. I sent 10 hives to Florida and filled them last February with bees driven from box hives and swarms. To this date the disease has not reappeared here or in Florida. I guess success was due to the severe burning given to the hives and frames. The melted combs furnished about 30 pounds of wax.

South Jacksonville, Fla. O. Bromfield.

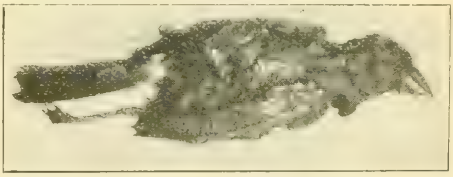
* * *

Wedge to Avoid Crushing Bees. The careful handling of bees, so as to avoid killing or irritating them, has long been my "hobby," and I have given this matter much study and thought. I have watched some who call themselves expert beemen, but who seem to care little how many bees they smash, so long as they "go through" a lot of hives quickly. When I replace a super or upper story on a very full hive, I use a light wooden wedge, 4 or 5 inches long, 2 inches wide at the large end and ⅞ inch thick. I carry two or three of these in my tool basket. This wedge is placed on top of the frames, with the large end projecting over the rear of the hive; then by letting the upper story rest on this and using a little smoke I can slowly lower the super in place without crushing any bees, even with very strong colonies. As the wedge is slowly withdrawn, it is given a slight movement sidewise, back and forth, which gives the bees time to get out of the way. Frank L. Wheeler.

Ripley, N. Y.

* * *

A Propolized English Sparrow. About the middle of last October, as I was adjusting and cleaning up my beehives for the winter, my attention was directed to a mass of excited bees on the bottom-board. I supposed they were "balling" a queen from their actions. A few puffs from the smoker scattered them, and I saw a mass of what I thought was an accumulation of propolis. Whereupon I removed the frames and pried the mass loose from the bottom-board, and reached in to remove it, thinking to place it in the can for refuse comb. But on looking at it, I found the remains of an English sparrow. As the entrance to this hive was, perhaps, two inches high, the bird would have had no trouble in entering, whether voluntarily or not. Perhaps it was driven into the hive by a hawk, or it may have been wounded and, in trying to hide, it crawled in. Whatever happened to the bird, I must say it was certainly embalmed for burial as few are.



English sparrow completely embalmed with propolis.

Linden, Ala. J. E. Sutton.

* * *

Peppermint for Uniting Bees. If you want to unite bees at any time, try the peppermint method. This method was brought to my attention last year by Dr. A. F. Bonney. Take a pint bottle with a sprinkler top, fill it nearly full of warm water, add a dessertspoonful of essence of peppermint and shake before using. Sprinkle the bees of both swarms with the peppermint water, and they will unite with-

HEADS OF GRAIN FROM DIFFERENT FIELDS

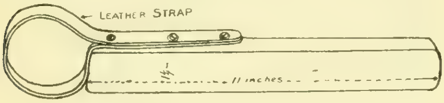
out fighting. It will not be necessary to use all the peppermint water to unite two swarms, but use from ¼ to ½ pint according to the strength of the colonies. This method should work well when packages of bees from the South are to be united with colonies which have come out weak in the spring. Last year I used it with success in uniting new swarms of black bees, brought in from the surrounding country, with the bees in my yard. Carl C. Johnson.

Pomfret, Vt.

* * *

A Wrench for Tight Screw Caps. I am sending you herewith a drawing of a wrench I made for the caps of 5-gallon honey cans. It works so well that I think perhaps others will want to make one also. The illustration is self-explanatory, only I might add that the leather strap should be looped so it just slips easily over the cap; also, should the leather get worn smooth so that it does not grip satisfactorily, rub it with a litle rosin or sandpaper it a little. J. H. Peterson.

Brigham City, Utah.



Homemade wrench to loosen screw caps.

* * *

Feeding Cold Syrup. It is funny how we work along different lines without knowing there is anything out of the ordinary in our methods. It never occurred to me there was anything unusual in feeding cold syrup with perforated pails. Of course, it is one of the great advantages of the pails.

Our crates of six ten-pound pails of feed are standard equipment with us just as queen-excluders or supers of combs. In the fall last year we fed over 12,000 pounds of sugar to 597 colonies. Our modus operandi is to put escapes on a yard, and go next day with a truckload of feed. One man trucks home the supers, while the rest of us pack the colonies and put on the feed. Thus the truck takes a load each way, bringing packing material if necessary on the second trip, and we get supers off and cases and feed on the yard all in one day. The feed has been mixed up on some previous day when there was a man to spare for the job—and a job wanted for the man. If we had to get the feed to the bees at the psychological moment when it is warm, I don't know what we would do. It would certainly complicate matters greatly. Of course, we pack the pails. The shavings are poured over them, and when they are to come off these shavings do for side packing. I cannot see how this could be injurious to the bees. On the contrary, cold syrup excites them much less than warm.

Georgetown, Ont. Morley Pettit.

* * *

Outdoor Wintering in Northern Ontario. During the past six years I have wintered both in the cellar and outdoors. For the past two winters the losses have been nil. Twenty Buckeye hives are wintered in sets of two to four under rough collapsible sheds. The hives are set three or four inches apart, with leaves between and behind. The others are packed two in a case, with 10 inches of chaff over the top. I have seen bees wintered in the latter way in northern Ontario, some distance north of the Cobalts in a latitude where 45° below is quite common. They were snowed in and therefore had excellent windbreaks. There is never any lack of snow up there. This was in 1918 and 1919, when we had but little snow here. Our beeyard is on a sidehill facing southeast, having a board fence to the rear, a row of poultry houses to the right and left and a temporary windbreak on the south. Calm always prevails within this enclosure.

Waterloo, Ont. L. J. Hedderick.

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Another Big Report from South Dakota. My losses were rather heavy last winter for some reason — perhaps the cold weather, as the bees had lots of winter stores. So I bought a few packages of J. J. Scott of Louisiana, two-pound packages with queens, costing me $4.00. From one of those packages I have taken off 200 pounds of comb honey, as nice as you ever saw, and I can take off another 40 pounds any day I wish to put an escape under the super. At this late hour, 11:30 p. m., as I stood at the door a few moments ago the bees, four or five rods distant, were roaring like a distant train. In fact, nearly every day lately they are flying in the afternoon as strong as in July. Another colony, my nineteenth, has produced 400 pounds of comb honey. This is one I wintered over.

I had 40 colonies in the spring, including what I shipped, and on these I have put 199 supers, each to contain 40 pounds, all of which, except perhaps 10, are full, and these 10 are nearly full.

I have taken off 97 supers, and am taking them off at the rate of 11 a day. If it were not for the fact that it is September instead of August, I should have put on at least 40 empty supers.

I should have done much better if it

HEADS OF GRAIN FROM DIFFERENT FIELDS

had not been for getting hurt in April, making it difficult to do much for about two months. Every ounce of honey I have produced this year is water-white.

Jamestown, S. D. F. C. Bennett.

[Our readers will recall that friend Bennett gave us a big report from a package of bees sent him about a year ago. Now, I used to think that both North Dakota and South Dakota are rather poor localities for bees. Although friend B. does not say his big yields were from his Hubam clover or perennial sweet clover, I am inclined to think it is the source of the greater part of the honey obtained at present in the Dakotas.—A. I. Root.]

* * *

In Defense of the Honeybee. I have lately seen many articles in various periodicals and newspapers in regard to people being stung by bees. I take exceptions to many of these stories for the reason that the majority of people do not know the difference between a bee, a hornet, a wasp or kindred insects.

For example, a neighbor who had screened his porch, called me in one afternoon, saying, "We have several of your bees in here, come in and catch them for me."

I went in and I found one bald-faced hornet, two big yellow jackets, several small hornets, a horsefly—the big kind—and a number of bluebottle flies, also a few wasps, but not a honeybee in the whole collection.

I would much rather be stung by a bee than a hornet, as it is not so severe for me. Any one who knows the difference will be cautions about interfering with hornet nests.

I hope that beekeepers will give this subject some consideration and uphold our useful friend, the honeybee. I make it a point in conversation on this subject to emphasize as well as show how many people err in this matter. The honeybee is not to be classed with those ill-tempered pirates, the yellow jacket and his various relations.

Holyoke, Mass. C. H. Taber.

* * *

Half Bee-Space Above and Below Frames. A bee-space is ¼ inch, which is counted as 2-Bu in Japanese measurement. We, Japanese beekeepers, converted our hives to have half the bee-space above and half below. Or, ⅛ inch is made on the top and and ⅛ inch at the bottom. It is true, there are many who use the top spacing, and some who use bottom spacing in Japan. But some of them have already done this converting.

Because, in top spacing, there occurs the same disadvantages that Mr. Latham pointed out in the March issue of Gleanings, and also, in bottom spacing, there is no bee-space above, the frames of the lower story will be propolized to the under edges of the super. This is inconvenient for us when the super is taken off, for the ends of the top-bars of the frames in the lower story will be attached to the super. The half bee-space above and the half below make the full bee-space between the upper and lower stories when they are supered.

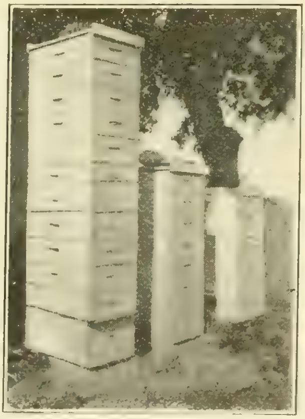
Yasuo Hiratsuka.

Tara, Gifu-ken, Japan.

* * *

616 Sections from One Colony, Spring Count. Bees are doing wonders here this year. I call it a double season. Yellow and white and Hubam clovers by the thousands of acres, and so cut back as to make a constant honey flow now 90 days with no let-up. Many colonies are nearing the 600-pound mark in surplus comb honey, and 30 days yet to go. This report is from spring count, all colonies having swarmed here in May. Amateurs count them two colonies while I count them as one.

In many cases the parent colony and the swarm have finished 11 supers each of 28 sections weighing 616 pounds; while a few have done much better, having finished 15 supers and still storing well. The past season will go down on record as the best I have known in my 43 years of beekeeping.

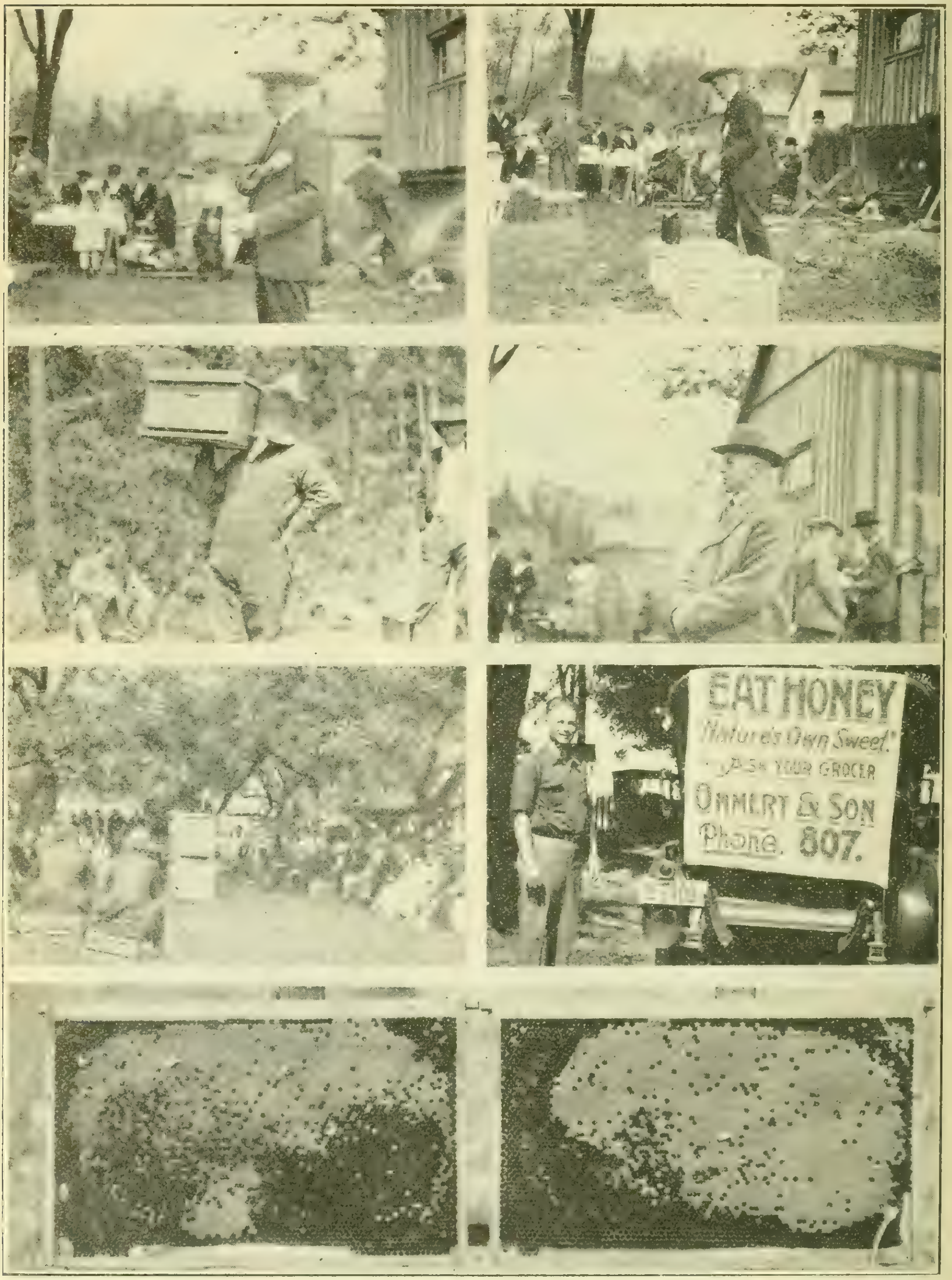


Six hundred and sixteen sections of comb honey from one colony, spring count. The parent colony and the swarm each finished 11 supers.

Recently I was out looking over some beeyards. If I had taken my kodak along, I could have sent you a picture of an apiary of 47 colonies tiered up like the tall one in this photo. Dr. E. A. Morgan.

Vermilion, S. D.

HEADS OF GRAIN FROM DIFFERENT FIELDS



Reading from left to right beginning at the upper row. (1) James Armstrong, veteran bee-inspector, Ontario, telling what not to do. (2) James Armstrong demonstrating. (3) The large hive has no terrors for this man. He says it is easy to lift with one hand. (4) H. G. Sibbald, talking to beekeepers at a field meet in Ontario. The cold day did not dampen the ardor of these Canadian beekeepers. (5) A characteristic field day in central New York. (6) A good suggestion for advertising honey. (7-8) What a good queen can do late in August when conditions are favorable.

BEES, MEN AND THINGS

(You may find it here)

REVERSE the entrance stop for winter so the top side is down. When this is done, dead bees cannot clog the entrance.''—Will L. Tower, Oakland County, Michigan.

''We have almost an entire failure of the honey crop here. Bees are actually starving unless fed, since they have consumed what surplus they had in July. Beekeepers are up against a serious problem.''—J. L. Barkley, Jasper County, Mississippi.

''The honey crop in this locality is very short. Fruit bloom, locust and poplar were destroyed by a hard freeze the last of April. Clover has yielded but poorly because of the wet cool spell of weather we have had this summer.''—F. D. Covell, Frederick County, Maryland.

''If Friend Woodruff (see July Gleanings, page 460) will set his smoker, when not using it, on the nearest beehive to the right (or on anything else—the ground sometimes will do) he will not only save his overalls and all other muss, but will find the habit more agreeable.''—L. Tissaw, Yavapai County, Arizona.

''I think most of the troubles that come to beginners came to me last year with the exception of foul brood, which I hope never to see; but I weathered the storms and came through with an increase of one swarm and a production of 200 pounds of honey, which I consider pretty good for a beginner. I am saving about one-half of this for 'millions of stores at our house' for the coming season, and trust that I may make then a better report.''—H. S. Thompson, Fulton County, N. Y.

''Owing to extreme dry and warm weather the usual crop of white clover was a total failure in Portland, although in some localities where there was sufficient moisture in the soil some beekeepers report a surplus from this source, but not so with many. Prospects early in the season here were good. Some surplus was stored from fruit and berry blossoms, and if white clover had yielded normally good reports would have been the rule; but bees in the mountains are doing better than for years. Some apiaries average 200 pounds of extracted honey from fireweed, which is yielding well. Contrary to teachings, colonies headed with queens three years old are the top-notchers, and for three years these same colonies have kept up their reputation as being the best. I could show you colonies, stacked six stories high, that have about 400 pounds ready to extract. We have but little foul brood this season, but enough to let us know we still have it.''—E. J. Ladd, Multnomah County, Oregon.

''I believe I am correct in saying that the British methods have long been looked down upon by other countries; but this, I am sure, is due more to their ignorance of our methods than from faulty management in our modern systems. Here then is an opportunity for your readers to get to know us better—'Read our new paper, The Bee World.' ''—F. M. Claridge, near Colchester, England.

''Carniolans or our native bees stand the confinement better than any strain of Italians I have tried. I wish some one would breed out three-fourths of the swarming trait from Carniolans and leave the good traits.''—O. B. Griffin, Aroostook County, Maine.

''I keep only one strain of bees—pure three-band Italian—and if an occasional hybrid shows up I supersede the queen at my earliest opportunity. I have great faith in pure Italians as being disease-proof.''—J. M. Munro, Ontario, Canada.

''I have come to the conclusion after a number of years experimenting that 10 to 15 pounds of good sugar syrup fed to bees a week or two before they are put into the cellar goes a long way to insure successful wintering.''—G. A. Barbisch, Houston County, Minnesota.

''Out of my 815 colonies I found last season only two cases of foul brood and only one cell of disease in each. That is speaking very well of my method of treatment, this being the next season from a clean up of over 100 colonies.''—E. G. Norton, Churchill County, Nevada.

'' 'Honey as a cosmetic' reminds me that in my youth honey was highly esteemed as a surgical dressing, keeping as it did the irritated surface soft and moist if not exactly antiseptic. Say, what about that antiseptic proposition, who knows?''—D. B. Thomas, Wright County, Missouri.

''I received one of the well-known letters of Jay Smith. As the postman delivered it to me he asked, 'John, how much do Italian queens cost?' 'Oh, two or three dollars.' 'Yes, my Italian queen cost me a lot more than that, and I have had to support her ever since.' (The postman is an Italian.)''—John Clark, Essex County, N. J.

''I got an old piano box and laid it down on its back. In this I put four of my six colonies of bees. I have about three inches of leaves around them and then newspapers laid on top and all around the hives. I left what you might call a dead-air space between the hives, and the papers kept out all the circulation of air, so I think they will come out all right in the spring.''—Forest McHose, Boone County, Ia.

TALKS TO BEGINNERS

Geo. S. Demuth

THROUGHOUT the northern portion of the country the bees will cease brood-rearing early this month, if they have not already done so. In the southern part of the country brood-rearing is continued a few weeks longer, but even there brood-rearing is entirely suspended usually some time during October. If all goes well with the colony, brood-rearing may not again be resumed until March in the North. If the bees are compelled to be unusually active because their stores are not good, because they are not sufficiently protected, or because the cluster is too small to keep up the heat of the colony without undue effort, brood-rearing may be begun earlier, sometimes in February or even in January. In the South where the bees fly frequently brood-rearing is usually begun earlier because of the stimulus from early-gathered nectar and pollen. As a rule, the better the bees are wintering, the longer they will postpone the beginning of brood-rearing in the spring.

Size of Cluster Needed for Winter.

One of the first things for the beginner to learn is that the bees must be in good condition in the fall in order to winter well. If the colonies are too small, or if they are made up largely of old bees that will die of old age before brood-rearing can be resumed in the spring, good wintering cannot be expected. Now that it is too late to rear any more young bees especially in the North, the only thing that can be done in the case of weak colonies is to unite two or more of them in order to make one strong colony for winter. A good colony will occupy at least five or six spaces between the combs on cool mornings when the temperature outside is near freezing. If the hive is double-walled, and therefore warmer inside, the cluster will be larger, so that in a well-packed hive a good colony will occupy most of the spaces in a ten-frame standard hive, and the cluster on cool mornings will touch both sides of the hive. Colonies that occupy less than five spaces between the combs, as a rule, should be united with another small colony; but, in estimating the strength of the colonies, it is well to remember that a small colony of young bees may have greater vitality than a large colony of old bees.

In the North it is now rather late to unite weak colonies by the newspaper plan as described in last issue, but if any have neglected to unite their weak colonies in September as there advised, it can still be done in another way. After brood-rearing has ceased and the weather is cool enough to cause the bees to form a compact cluster, they can be united by simply transferring the combs of bees directly from one hive to another. To unite two colonies in this way, take out all of the combs not occupied by bees from each hive. Then take out one of the outside combs which contains only a few bees from each colony and brush these back into the hive of the stronger colony. This will leave a comb in each hive on the outside that has a large circle of bees on it. Now take out the combs from the weaker of the two colonies *en masse*, if the frames can be handled in this way, and set this group of frames down into the other hive in such a manner that the two clusters shall come in contact. If the weather is cool enough at the time of uniting, colonies united in this way do not fight. No attention need be paid to the queen. In fact, it would be difficult to find her after the bees have ceased brood-rearing and have formed a cluster.

To Make the Hive Fit the Cluster.

If any of the combs at the sides of the hive are empty and not occupied by the bees on cool mornings, it is well to take out these empty combs to reduce the size of the brood-chamber to fit the cluster. The space made vacant by taking out these combs should be filled either with chaff division boards or by tight-fitting division-boards with packing material, such as dry forest leaves or planer shavings, packed in the spaces between the division-boards and the sides of the hive. Some beekeepers reduce their colonies to seven frames or even less during the winter, placing a chaff division-board at each side to fill up the space. If, however, the combs at the sides are filled with honey it will not be advisable to remove them, but the bees should be packed so well for winter that the cluster will reach nearly across the hive from side to side. Usually it is not necessary either to unite colonies in the fall or to reduce the winter chamber in this way unless the bees have swarmed excessively or the beekeeper has made too much increase by dividing his colonies.

Winter Stores.

In addition to having enough vigorous young bees to form a good-sized winter cluster, each colony should have not less than 25 or 30 pounds of stores for winter. The amount of honey in each hive can be determined approximately by weighing the hive as it stands and then deducting the weight of the hive, combs and bees. A standard ten-frame hive, with a metal cover and an inner cover but with empty combs, weighs about 34 pounds. To this should be added about five pounds for the bees and a little pollen in the combs, making the total weight of the hive and bees without honey about 39 to 40 pounds. Hives made of lumber heavier than pine will weigh more than this, and of course the double walled hives will vary in weight according to the kind of packing used. The Buckeye hive, when packed with planer shavings, weighs about 38½ pounds without the chaff tray or cover. By weighing an empty hive without frames, and then adding one pound for each comb, one can determine with sufficient accuracy the weight of whatever hive is used.

In weighing the hive, if platform scales are not available, the weight can be determined with sufficient accuracy by using ordinary spring scales, by hooking under one end of the hive at a time and lifting it enough to obtain the reading. Adding together the weights obtained by weighing each end of the hive the approximate weight of the entire hive is obtained.

In order to be sure that there are at least 30 pounds of honey in the hive, the total weight of the ten-frame standard hive with a metal cover and an inner cover should be not less than 68 to 70 pounds. An eight-frame hive similarly equipped and provisioned should weigh not less than 62 to 65 pounds. Any that weigh less should be fed until the weight of the hive shows that it has at least 30 pounds of stores. Or, if frames of honey are available, one or two combs that contain but little honey can be taken out and frames of honey inserted in their place.

How to Make Syrup for Winter Feeding.

For feeding at this season syrup should be made of about two parts of granulated sugar to one part of water, either by weight or by measure. Nothing but granulated sugar should be used for this purpose, especially in the North where the bees are confined to their hives for long periods during the winter without a cleansing flight. Apparently it makes but little if any difference whether cane sugar or beet sugar is used for winter feeding. It is well to count on using about as many pounds of sugar as the colony is lacking in its full supply of stores, not counting the water used in making the syrup. For instance, if a colony lacks 10 pounds of having enough honey, it will need about 10 pounds of sugar. Ten pounds of sugar and five pounds of water will make fifteen pounds of syrup; but, since there will be some loss in the process of feeding, it will be safer to give such colonies the full 15 pounds of syrup than less.

To make up this amount of syrup, put five pints of water into a vessel and heat it to the boiling point, then pour in ten pounds of sugar and stir until all of the crystals are completely dissolved. To reduce the tendency of this thick syrup to crystallize in the combs or in the feeders, dissolve a little over a half teaspoonful of tartaric acid in a little water and add this to the syrup or put the acid in the hot water before adding the sugar. Since the action of the acid to prevent granulation takes place only while the syrup is hot, it is well to bring the temperature of the syrup to the boiling point and hold it there for 10 or 15 minutes; but great care should be taken not to scorch the syrup, for scorched syrup in many cases would be fatal to the bees during winter.

How to Feed the Syrup.

To make a feeder, use an ordinary ten-pound friction-top honey pail. Punch about 100 small holes in the cover by means of a small nail and hammer. When the syrup has cooled enough so that it does not burn the hands, the pail may be filled with the warm syrup and the lid put in place. It should then be inverted and placed directly on the top of the frames in the hive or above an escape-board having the bee-escape removed so that the bees can have access to the feeder. When the bee-escape board is not used a hole the size of the pail should be cut in a piece of burlap so that the hive can be covered except where the feeder stands. An empty hive-body should be put on top of the hive, and the pail of warm syrup should be packed with old clothing or some kind of packing material until the bees have had time to take the syrup down.

In the extreme northern part of the United States and in Canada where the bees are confined to their hives for long periods without a cleansing flight, they will winter much better if fed 10 to 15 pounds of sugar syrup as above described, even though they have plenty of honey. If this is fed some time during October the bees will put it where it will be used first during the winter, and, since good sugar syrup does not contain indigestible matter, it will be better than honey for winter stores that may have been gathered late.

Winter Protection.

For wintering outdoors the hives should be protected from the prevailing winds. If they are not already located in a protected place, some kind of windbreak should be provided. Except in the extreme South it pays well also to pack the bees for winter, thus giving them greater protection than that afforded by a single thickness of lumber in single-walled hives. Those who use the double-walled hives having the packing already built in should see that the top packing is put in place and pressed down at the edges to prevent the escape of heat between the chaff tray and the upper portion of the hive. It is well, also, to fill the hive-stand with forest leaves and see that the hive fits the hive-stands snugly so that the wind will not sweep through under the hive. Single-walled hives can be packed in a store box, if one can be found that is the right size to allow from two to four inches below, three to six inches on the sides and eight or ten inches on the top for packing. Care should be taken to fit the bridge connecting the hive entrance with the opening in the outer box, so that the packing material may not creep into this tunnel and close it during the winter. A good roof must be provided so that no water can leak through to wet

(Continued on page 680.)

GLEANED BY ASKING

Geo. S. Demuth

QUESTION.—Do the bees ever need more food than the brood-chamber full during the winter months?

J. L. Whittier.
Georgia.

Answer. — If the brood-chamber is full of honey the colony has sufficient stores for winter, but brood-chambers are not often full. When extracted honey is being produced, too often there is but little honey left for the bees if all the supers are removed at the close of the season. For this reason it is necessary either to leave some of the honey in the supers or to feed heavily for winter. In milder climates, many beekeepers leave an upper story nearly full of honey to insure sufficient winter stores. In the far north where the winters are severe or wherever it is desirable to winter in a single story, it is necessary either to feed the colonies run for extracted honey or to put combs of honey from the supers into the brood-chambers before all the honey has been extracted. Even large brood-chambers are usually short of honey in extracted-honey production unless there is a fall honey flow. In comb-honey production there is usually more honey in the brood-chamber at the close of the season.

Size of Entrance for Winter Packing Cases.

Question.—When bees are packed in the large packing case should the hive entrance be left ⅞ inch deep by the full width of the hive or should it be reduced ⅜ inch by 3 inches by using the entrance block?

Edwin Helt.
Illinois.

Answer.—It is well to leave the large entrance at the hive and also have a deep tunnel from the hive to the outer case. The entrance is then reduced to the desired size by closing down the entrance to the packing case. Some use a tunnel 1 inch deep and some even 1½ inches deep, the opening in the outer case being the same depth and about 8 or 10 inches long. This opening is then closed except ⅜ inch at one end, making a vertical opening ⅜ inch wide by 1½ inches high. Some use a block having a single ½-inch auger hole for closing the opening in the outer case. In the spring this entrance block is removed when the bees need a larger entrance.

Robbing Out Colony Infested With Moth.

Question.—I had moths in one of my hives and turned it up to clean out the bottom. The next day other bees piled in by the hundreds and robbed this colony. What can I do for it now?

Pennsylvania. E. F. Holman.

Answer.—There was no doubt something wrong with this colony, such as queenlessness, lack of food or one of the brood diseases, which so weakened it that the moths were able to get a start. This same weakness also made the colony easy prey for the robbers. The colony was in all probability practically worthless before the robbers began on it, so the loss of this colony is not a real loss since it would probably have died anyway early in the winter. If it was weakened by one of the brood diseases this robbing out takes on a more serious aspect, for the disease would then be carried to the other colonies. You can tell by looking at the brood-combs whether the colony had American foul brood, for the evidence of this disease is left in the combs long after the colony has died, the evidence being in the form of dark-brown scales lying on the lower cell wall. These scales can be seen by holding the comb in a good light and then tipping the upper edge toward the eyes so that the light strikes the lower side of the cell. In the case of doubt, a piece of comb containing such scales or dead and discolored larvae or pupae can be sent to the Bureau of Entomology, Washington, D. C., for examination. If this colony had American foul brood, it will be necessary to keep close watch over the other colonies for disease next spring.

Newspaper Method for Uniting.

Question.—Do you advise uniting for winter by the simple newspaper method, or would you advise separating the colonies by a wire screen for a day of two and then using the newspaper plan? Also, about how long before the time of packing for winter would you advise that I unite them?

Virginia. J. P. Jones.

Answer.—It is not necessary to use a wire screen between the two colonies before placing the newspaper between. In fact, it would be a disadvantage instead of an advantage. Unite before cool weather begins.

Killing Bees Not Wanted for Winter.

Question.—My bees have swarmed so much that they have not stored any surplus honey. I do not want so many colonies. How can I kill the bees I do not want for winter?

Pennsylvania. Mrs. Stephen Schmidt.

Answer.—Instead of killing any of the bees it will be much better to unite them until you have reduced to the desired number of colonies. If they are all strong enough for winter, it will be be better to unite them next spring; but, if they are not as strong as they should be now, you can unite them now before you pack them for winter.

Moth Larvae in Comb Honey.

Question.—I find tiny white worms in the sections of comb honey taken off three weeks ago. What is the cause of this, and how can I store comb honey to prevent it?

B. J. Stover.
Nebraska.

Answer.—These tiny white worms are the larvae of the wax moth. The eggs from which they hatched may have been on the honey when it was taken from the hives, in which case storing the honey in a moth-proof room would not have prevented your trouble. You can kill these larvae by fumigating the supers of comb honey with carbon bisulphide. To do this, pile the supers in a tight pile, place an empty super on top and in it place a shallow dish containing an ounce of carbon bisulphide if there are five supers in the pile, and two ounces if there are ten supers in the pile. Place a tight cover on top and leave several hours or over night.

Bee Room in Basement with Furnace.

Question.—How can we fix our bee room in the basement adjacent to the furnace room so it will not be too warm for the bees? Mae McFarlane.
Minnesota.

Answer.—There is not much danger of the cellar becoming too warm from the furnace room if the furnace is properly installed; but it may become too warm during mild weather if much of the outside is exposed above ground, permitting outside temperature greatly to influence the cellar temperature. By banking up the outer walls with earth or with straw this can be largely overcome.

Saving Bees Taken from Bee-Tree.

Question.—How can I save the bees taken from a bee-tree that is cut as late as October?
Virginia. Miss L. de Bruijn.

Answer.—You can save these bees by hiving them on combs of honey if you have them. If you do not have them but have empty combs, you can hive the bees on the empty combs and then feed them enough for winter. They will need 20 to 30 pounds of thick sugar syrup or honey. It would be difficult to save the bees without combs, though this could no doubt be done in your locality even this late by giving them frames of foundation and feeding them warm syrup.

Confining Bees in Hives During Winter.

Question.—Last winter I fixed my colonies in the attic with a wire screen over the entrances inside for ventilation but closed from out of doors. In December they became quite restless and the dead bees nearly closed the entrance. What was the cause of their restlessness? A. W. Stone.
Michigan.

Answer.—The bees were restless because they were imprisoned within the hive. The entrance cannot safely be closed in this way during the winter even when the bees do not fly, because as soon as they discover that they cannot escape from the hive they become greatly excited and soon die in great numbers from exhaustion. It is necessary to leave a small opening at the entrance during the winter.

Wintering Weak Colony Over Strong One.

Question.—What is the best method of wintering a weak colony over a strong one, if such a method will work? F. B. Lambert.
West Virginia.

Answer.—While you might be able to do this in your locality by placing a wire cloth between, it will be better to winter the two colonies separately. The weak colony should have the combs that are not occupied taken out and the space filled with chaff division-boards or by a tight-fitting division-board with packing back of it. To place the weak colony over the strong one would rob the strong colony of too much heat.

Imports and Exports of Honey for United States.

Question. Please inform me, if possible, as to the amount of honey that was imported and exported for the United States last year.
Tennessee. Hamilton Steele.

Answer.—According to the figures secured through the Bureau of Foreign and Domestic Commerce, the total amount of honey exported from the United States during the calendar year 1921 was 1,880,511 pounds. The amount of honey imported from foreign countries during the same period was 1,953,312 pounds. The amount of honey shipped to the continent from Porto Rico and Hawaii was 2,507,224 pounds, thus making a total of nearly four and one-half million pounds brought into continental United States.

During the fiscal year ending June 30, 1922, the amount of honey exported was 2,406,922 pounds. The amount imported during the same period was 2,556,540 pounds. In addition to this 2,494,353 pounds were shipped to the continent from Porto Rico and Hawaii, making a total of more than five million pounds brought into continental United States.

Virulence of Spores in American Foul Brood.

Question.—I have some extracted honey several years old that was taken from a colony having foul brood, some of it being granulated. Should I use this in any way to feed my bees for winter?
Ohio. A. C. Arnold.

Answer.—It will not be safe for you to feed the honey that was stored by the colony having American foul brood even though the honey is several years old. American foul brood spores retain their virulence for many years. It will be much better for you to feed sugar syrup for winter instead of this honey. You can feed this honey to the bees next spring by diluting it with an equal quantity of water and boiling in a closed vessel for a half hour to render it sterile.

Killing Bees of Diseased Colonies.

Question. I find a few colonies badly infected with American foul brood this fall. I would like to kill the bees by the most humane method and clean up. What shall I use?
Indiana. Chas. E. Caldwell.

Answer.—You can kill the bees by setting the hive (without bottom) over burning sulphur in a shallow pit in the ground or by closing the entrance of the hive, then pouring in a cupful of gasoline at the top evenly distributed over the tops of the frames and then closing down the cover tightly. If sulphur is used, a shovelful of live coals should be placed in the bottom of the pit and the sulphur thrown on the glowing coals.

Feeding Corn Syrup for Winter.

Question.—Would it be safe to feed corn syrup (Karo) for the bees to winter on?
Kansas. M. C. Rathbun.

Answer.—Corn syrup would not be fit for winter food for the bees even if you could induce them to take it, which is doubtful. Even a small amount of this syrup mixed with sugar syrup would be fatal to the colonies in the North where the bees cannot have frequent flights.

JUST NEWS

Editors

THE University of Wisconsin announces a short course in beekeeping to be held at Madison, Nov. 13 to Dec. 20. Further information in regard to this short course can be obtained by writing to Prof. H. F. Wilson, Madison, Wis.

* * *

The annual meeting of the Northern Illinois and Southern Wisconsin Beekeepers' Association will be held in the courthouse in Freeport, Ill., Tuesday, October 17. Further particulars in regard to this meeting may be had by writing to the secretary, B. Kennedy, 416 East State Street, Rockford, Ill.

* * *

Dr. S. B. Fracker, State Entomologist of Wisconsin, has accepted the secretaryship for the American Honey Producers' League for the remainder of the year. When the new officers of the League were elected there was no secretary chosen, and Dr. Fracker has consented to take this position until a new secretary can be elected.

* * *

Prof. F. Eric Millen, Provincial Apiarist of Ontario, writes that great preparations are being made for the Ontario Beekeepers' Convention on Dec. 6, 7 and 8. The debate by prominent Ontario beekeepers on the merits of the ten-frame Langstroth hive as compared with larger hives and an important business session in regard to the handling of supplies are the two outstanding features of this convention.

* * *

The new officers of the American Honey Producers' League have tentatively set the date for the next annual meeting for Feb. 6, 7 and 8, the meeting to be held at St. Louis, Mo. If possible, arrangements will be made to have the Illinois and the Missouri State Beekeepers' Associations meet at the same place on Feb. 8 and 9. This arrangement if carried out will permit the beekeepers of these two states to attend the meetings of the American Honey Producers' League at the same time they attend their own state meetings.

* * *

The Schedule Committee of the American Honey Producers' League is now arranging the League schedule of winter meetings. This committee arranges the meetings in the various groups of states in such a manner that outside speakers can go from one meeting to another without losing so much time and with less travel than was necessary under the old plan. In this way many associations were able to secure outside speakers that could not have been obtained otherwise. Secretaries of beekeepers' associations who have not already been in correspondence with the Schedule Committee should make application at once to Prof. H. F. Wilson, Madison, Wis., in order that the meeting may be held at a time when outside speakers can attend.

* * *

Ray Hutson, formerly of West Virginia, is taking up research work in beekeeping for the state of New Jersey. Mr. Hutson will do some work in breeding, investigations as to the value of bees in commercial orchards and an investigation of the damage to adult bees in the state of New Jersey, supposed to be from poisoning. His work is under the supervision of Dr. Headlee, State Entomologist. The turning over of the investigation work to Mr. Hutson will relieve E. G. Carr of this work and permit him to give his time to inspection and educational work.

* * *

Friedman Greiner, the well-known beekeeper of Naples, N. Y., was accidentally killed on August 22. Mr. Greiner left his home in an automobile at 4 o'clock in the morning, taking with him his shotgun. In driving over a bridge, the shotgun is believed to have been discharged, the charge of shot entering his body. Marks on the road showed that the car zigzagged down the road for some distance, then plunged over an embankment. The shotgun was found in a clay bank where it was probably thrown by the explosion. Mr. Greiner is well known to the readers of this journal through his writings, having been a contributor for many years.

* * *

The Dr. C. C. Miller Memorial Library Committee, co-operating with the University of Wisconsin and the State Beekeepers' Association, is planning a Miller Memorial pilgrimage of beekeepers in 1923 in connection with the annual Beekeepers' Chautauqua, which will be held on the university grounds at Madison, Wis., August 13 to 18, 1923. During this period the Dr. Miller Library will be dedicated, and on Saturday, August 18, a pilgrimage will be made to the former home of Dr. Miller at Marengo, Illinois. The committee is arranging for memorial services to be held at the church at Marengo in which Dr. Miller for many years taught a Sunday school class. If arrangements can be made with the church authorities, a memorial plate will be placed in the church at that time. During the Chautauqua a regular program of speeches will be given, and Dr. Phillips, C. P. Dadant, E. R. Root and G. S. Demuth have already agreed to attend.

* * *

Geo. H. Rea has resigned his position as extension specialist at State College, Pa., to take up work with the A. I. Root Co. as service representative.

OUR HOMES

A. I. ROOT

My brethren, count it all joy when ye fall into divers temptations; knowing this, that the trying of your faith worketh patience. But let patience have her perfect work, that ye may be perfect and entire, wanting nothing. If any of you lack wisdom, let him ask of God, that giveth to all men liberally, and upbraideth not, and it shall be given him. But let him ask in faith, nothing wavering; for he that wavereth is like a wave of the sea driven with the wind and tossed.—James 1:2-6.

WHEN I commenced reading the Bible at the turning-point of my life (which I have referred to so many times) I would now and then burst out laughing, and it really frightened the dear wife. It was contrary to her bringing-up. She had always been taught, or supposed that the reading of the Bible was a sacred and solemn thing; and I agree with her when I say it is. But yet there is a lot in the Bible that should prompt us to "rejoice and be glad." And there are many funny things that the Bible tells about—at least they were funny to me, because of the many *unexpected* triumphs of righteousness over iniquity. A friend of mine, a man who had been addicted to drinking, gambling, and no one knows what else, was suddenly converted. His wife told Mrs. Root and me that he would often break out suddenly and say: "O Polly! Just listen to this. Did you ever know before there are such glorious promises in the Bible?"

And this, my friends, is as it should be. The Bible is a literal gold mine when the the Holy Spirit goes with it to make it plain. I have told you that frequently some precious promise from the Bible comes to me as if it were the voice of somebody speaking. And sometimes it speaks *plainer* than literal words. I am now going to tell you how it has *just been* speaking to me.

If you will turn to Our Homes in the September issue, page 601, last paragraph, where I mentioned that precious promise, "My grace is sufficient for thee," you will get at the point. After that page was in print and I was looking over the printed words, the Holy Spirit spoke to me again (I hope you will excuse me for putting it that way), and this is what it said:

"Count it all *joy* when ye fall into divers temptations." Instead of having the blues and beginning to doubt God's word—that is, I am afraid I began to doubt just a little—I ought to have counted it "all joy." The idea seemed almost ridiculous or preposterous, if you will excuse my using such terms. The idea of counting it *all joy*, when Satan has been testing you perhaps day and night for days, or maybe weeks! Just think of the idea of scraping up courage enough to rejoice and praise God that he has honored you and trusted you (mind the word *trusted*) to let Satan get in all his tricks. And then for you to feel blue and discouraged because you have yielded just a little by listening to what Satan had to offer. Instead of feeling as guilty as if you had already committed a crime, you should just "count it all joy."

Now, my dear brother or sister, while what I have been telling you is in mind read over the Psalms of David, and see if they do not shine out with a new meaning.* You will then be ready to go on and read the first verses of that wonderful epistle of James. This experience which the dear Savior has permitted you to go through with has been to try your faith and make it stronger. A baby in learning to walk would make no headway if it did not get any bumps and falls; and the newborn soul that is just learning to follow the Master gets stronger and braver by his bumps and falls. Therefore "let patience have her perfect work." And the last verse tells us to hold fast to our faith. No matter what happens, do not get discouraged, and do not even think of turning back, for Jesus says, "No man, having put his hand to the plow, and looking back, is fit for the kingdom of God."

Now, dear friends, I want to switch off a little and talk about "casting your bread on the waters," and the promise that, after you have forgotten all about it, and can not remember the transaction at all, you should find it "after many days." Read the following letter:

By the way, I do not think I ever told you younger folk of the firm how A. I. Root treated me nearly 40 years ago. At that time I was a raw unsophisticated country lad with little knowledge of business methods, but even then a crank on bees. I had over a dozen colonies at the time all in hives and frames fashioned with a handsaw. Somehow I obtained possession of A. I

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* Here is one as an illustration:

For innumerable evils have compassed me about: mine iniquities have taken hold upon me, so that I am not able to look up; they are more than the hairs of mine head; therefore my heart faileth me.—Psalm 40:12.

I have seen that verse many times, but I had somehow got it into my head that David said his *enemies* were more than the hairs of his head, and that had always seemed to me rather preposterous. If he had really said *enemies* it would have been preposterous; but, bless your heart, it was not his enemies—it was his *iniquities*. It was not the outside world that troubled him. It was Satan in his own heart. Remember the dear Savior said (Mark 7:18) that it is not "that which entereth into the man," that defiles him, but "that which cometh out of the man." With this explanation, read from verse 18 to verse 24 of Psalm 40.

Root's catalog, and I pored over it day and night, and how I longed for some of the lovely goods listed and illustrated therein. Anyhow I managed by hard work and scrimping to save up something like $100, which I sent straight away to America, and was delighted in due course to receive invoices, etc., to say that my goods had been shipped per the ''Albert Russell'' from New York. Isn't that name indelibly engraved on my memory? Soon after, however, news reached Australia that the ''Albert Russell'' had foundered three days after leaving New York. As I knew nothing of shipping, etc., at the time, I had given no instructions for the goods to be insured. I can assure you it was a case of ''Blasted Hopes.'' How I did want those up-to-date goods—particularly the extracting outfit—and how I did want that bit of capital? In my innocence I wrote to A. I. Root asking him if there was any possibility of recovering something from the shipping companies. Of course the reply was that there was no possibility whatever of securing any compensation, but this is what A. I. Root himself did. He wrote straightway and offered under the circumstances to duplicate the whole order for half price. A. I. Root was under no obligation whatever to do this. He had probably never heard of me before, and for all he knew would never hear from me again—yet he did it. I must add that since then I have had the pleasure of sending some tens of thousands of dollars to the A. I. Root Co., and every deal has been more than satisfactory, so it is quite evident that there is a good deal of the old A. I. Root personality still pervading the business. If ever you wish to make use of this reference to A. I. Root, you are quite welcome to publish it.

H. L. Jones.

Goodna, Queensland, June 19, 1922.

Now, you may be a little surprised when I tell you that I have no recollection of any such transaction; but when I got to the point of his letter telling how hard he had worked to scrape up the money, and how it was now all gone, not a trace of it left, I began wondering if our institution away back in the years gone by did not make some kind of liberal offer to send him more goods. *Perhaps* I did it myself. But one might think at first glance that standing half the loss was a pretty liberal suggestion. And now here is a moral in the above story, and it is right along in accordance with Bible teaching, ''Do good and lend, hoping for nothing again.'' Would one suppose we would be likely to have *made money* by that liberal way of fixing up the catastrophe? If he sent us thousands of dollars as a result of that ridiculous (?) offer, the profit amply made up what we lost; and then think of having somebody watch for the opportunity to speak a good word for us, for 30 or 40 years, was not that worth more than one can well estimate? Is there any other book or any other source in the whole wide world that gives such suggestions and encouragement as the Bible?

Just one little item in closing:

Years ago at a teachers' meeting we were talking about the text, ''Blessed are ye when men shall revile you, and persecute you, and shall say all manner of evil against you falsely, for my sake. Rejoice and be exceeding glad.'' I suggested there is a place in the Bible where it says we should not only rejoice but ''leap for joy'' when we are unjustly accused and persecuted. The rest of the class there, perhaps a dozen teachers, turned on me and asked me where I could find any such thing in the Bible. Yes, the minister, too, who was present, joined in the laugh at my expense. I kept insisting that I was right; and before the meeting closed I turned to the passage in question, finding it in the sixth chapter of Luke, verse 23. After I had silenced them all I still felt sore; and because they had run on me as they did, I thought there ought to be an unanimous apology. The preacher, however, suggested by way of defense that I had the ''advantage.'' Then I asked for an explanation. ''In what way, my friends, did I have any advantage in so stoutly insisting that I was right?''

Then our good pastor paid me a high compliment by saying, ''My good friends, Mr. Root had the advantage of us in that he has been studying the Scriptures, perhaps, more than any of the rest of us have. And he has also studied them with more *enthusiasm* in order to get out these wonderful hidden promises and truths.''

''A Land Flowing With Milk and Honey.''

Artichokes, Helianti and Sunflowers.

I have a long story to tell you; and I hope it will interest you as much as it has myself, and that it will help in the great work of making not only our land but the lands of the whole wide world, lands ''flowing with milk and honey.'' One morning when I carried a load of my nice Bliss Triumph potatoes to market with my electric automobile the people gathered around on the sidewalk. Somebody said, ''Why, Mr. Root, how does it come that *you alone* succeed in growing those beautiful potatoes?''

I replied, ''My good friend, I have been growing potatoes (or at least *seeing* them grow) almost every year of my life for *eighty years.*''

I have told about the doctors telling my mother (bless her memory!) that if she wanted to see me get back to life she would have to keep me out of doors as much as possible, and get me interested in outdoor work and seeing things grow. My good mother always had some early potatoes, and she taught me how to grow them in the rich soft dirt, and pull them out of the hill. I think she got me interested in gardening before I was three years old. When I was five years old we left the farm and moved into a little town. Just as soon as we were fairly located I remember mother said she must have a flower bed. By the way, did you ever know of a mother who did not love flowers? About the only available good soil in that new home was a chipyard where they had chopped up firewood for years past. By her directions father scraped up a great mound of ''chip dirt.'' Of course he raked out all of the bits of wood, sticks, etc.

and this reminds me that my good friend Elizabeth White said that the very best fertilizer for this wonderful new blueberry is dirt scraped up from an old chip pile. And this recalls that I have not told you about my two blueberry plants or little trees. Each one bore a fine crop of fruit; but as they were of different varieties one was a little ahead of the other. Our Medina birds were not at all slow in discovering the delicious blueberries, and before I knew it one bush was almost completely stripped. When the birds got a taste of them they could not wait till the berries ripened. But I ''got busy'' just then, and put a wire-cloth screen over the other bush, and thus I saved the berries. This wire-cloth screen is one we had made to keep our seed corn so the rats and mice could not get at it. Let us now get back to that mound of chip dirt.

Mother planted her flower seeds, but only one plant came up. This she took great pains with, dug about and watered it, and it grew tremendously. It went away up above our heads and branched out, and in due time it was covered with innumerable blossoms. Father had been joking her right along about her ''posy bed.'' He said her one plant was nothing but a great weed; but when it was covered with blossoms and was *humming with bees*, he owned up that it was something worth while after all. But I think he did not quite give up that it was only a weed.

One day when the whole family were admiring it he called our attention to the way the ground was heaving up, as if there were big potatoes or something else under the soil. Then he stooped down and pulled out a large *artichoke*. There was a big laugh all around, but we five children made good use of the big crop of artichokes from just one hill. The rich, mellow chip dirt did the business. Rotten wood or decayed sawdust, we are told, produces an acid soil, and almost all kinds of acid fruits do better with this acid soil; and it seems also to suit this particular but, in some respects, well-known vegetable, the artichoke.*

In Gleanings for April 15, 1913, I gave a description of a new tuber plant brought out by John Lewis Childs called ''helianti.'' Here is his description of it:

Big Money Growing Helianti.

Helianti, the new ''Wonder Plant,'' the great combination vegetable. As a money-maker it's a wonder. Unlike ginseng, you don't have to wait five years for a crop. A very showy flower and a new summer and winter vegetable of phenomenal merit. This new plant produces showy golden-yellow flowers like cosmos blossoms, in endless profusion, and immense quantities of fleshy tubers, somewhat after the style of sweet potatoes, that are splendid eating fall, winter and spring. It stands both heat and cold, and will thrive anywhere in any soil or climate. What would you think of hay, potatoes, asparagus, cauliflower, oyster-plant, mushrooms, squash and beautiful flowers, all on one plant?

Of course I sent for some, and in due time had some tubers, and also a great mass of flowers covered with bees, that reminded me of my mother's posy bed of years ago. Cooked as directed, these were delicious eating, without any question. In fact, they made a pretty good substitute for oysters, and tasted a little like the well-known salsify or vegetable oyster. But in our clay soil the yield was poor, and it was quite a little trouble to dig them; and Mrs. Root objected that they were a good deal of trouble to prepare for cooking. A little later a friend in California gave us some that were quite a little larger, and he claimed that they would yield as many bushels per acre as potatoes; but we never succeeded in getting a yield anything like it. Furthermore, after my write-up in Gleanings one of our office girls brought me about a dozen of the real old-fashioned artichokes; and after we had enjoyed the helianti tubers for quite a spell, Mrs. Root tried cooking the artichokes in the same way, and pronounced them almost if not quite equal.

Let us now drop the artichoke we have been talking about, for another artichoke that bears a vegetable above the ground instead of under it. Let me introduce it by a clipping below from the Scientific American:

Thistle Gardening in San Francisco.

By G. A. Orb.

In the backyards of San Francisco and the Half Moon Bay region we find a giant thistle being cultivated for its food value—a giant thistle of Mediterranean origin with spines which are both relentless and cruel, but a large purple flower most gloriously scented which holds an irresistible lure for the bees; a giant thistle which so loves its adopted home that it refuses to be grown elsewhere in spite of the many attempts to do so.

This same thistle, with its wonderful, big buds and great Corinthian leaves with their prickly spines, is known to the consumer as the artichoke; and such a delicacy do we regard the bud of this same flower that it sells for a higher price than the famous Hood River apples, Fresno raisins, Florida oranges, or Santa Clara apricots. Indeed, in our cities not only do we find it displayed in the fancy grocery, but not unusual is it to find the push-cart peddler devoting a part of his limited space to the same delicacy, and both the rich man and the poor man buy it—often paying as high as a quarter apiece.

We might perhaps better speak of this unique industry as floriculture rather than market gardening; but by whatever name we call it, California reaps the nice annual return of better than a million and a half from it. The artichoke season begins early in the days of October and reaches its crest about the first of April; nor accidental is it that it should reach its height just at the time when it will make the most definite appeal to the city consumer. St. Louis, New Orleans, New York, Chicago, as well as the cities along the Pacific slope, all draw their supply from San Francisco. From this region (and the land just a few miles south) there were shipped last year some 500 carload lots; 350 of these went to eastern cities, and 150 to cities along the Pacific slope, while, of course, San Francisco itself is a big consumer.

Twenty-five cents apiece does not seem such a high price to pay for this delicacy when we stop to think that it must go on the market in the middle of the winter when the appeal to the popular taste will be most powerful; and when we realize what a back-breaking job it is to prune carefully and cultivate the plant so that it may break forth into blossom at just the identical time we desire, and that this same blossom shall hold all of the delicious succulence which makes it so loved. The grower cuts back his plants in June, and it is marvelous how soon after the plant has been pruned to the very ground the great new leaves and sturdy flower stalks make their appearance. And if it be given plenty to eat—for it has a ravenous appetite and must have plenty of fertilizer, plenty of water, with long days of bright sunshine and a rich black loam soil—it will be most accommodating and bud and blossom just as the gardener would like. But woe betide the gardener who cuts down the ration!

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* Not far from where I sit is a ginseng shed; and it has been running for a dozen years or more. The proprietor told me that the only fertilizer that can be used successfully with ginseng is rotten sawdust—just that and nothing else. Of course the plants must be shaded from the sun to imitate their native woods. So it seems there are quite a few fruits and vegetables that need and sometimes ''insist'' on this acid soil produced by decaying vegetable matter without any stable manure or similar fertilizer.

You will notice in the above that this artichoke is also a honey plant; and our good friend Burbank tells us in his circular that he has perfected a variety of this artichoke with blossoms as large as a bushel basket; and the bud of this plant before the blossoms come out has been found to be such a delicious food that *500 carloads* were shipped to eastern cities in 1921. Perhaps somebody can tell me how many carloads are *now* being shipped. As you perhaps know, I have now two daughters in Los Angeles, Calif., and they are agreed that artichoke buds are a delicious vegetable. But they do not get buds anything like the size Burbank mentions. Some years ago I was interested in this new artichoke, and succeeded in getting one or two to bloom here in Ohio; but we had forgotten or did not know just how to use the plant, and never made any use of the buds. Some of the leaves of that plant were three to four feet long. We have a few plants growing in our garden now that came from Burbank; but I fear our season is going to be too short for them. We give here a cut of this artichoke to show you what they look like.

The California artichoke, or "big thistle," which bears edible buds that are now being shipped to the large cities all over the United States by the carload. Burbank tells us of an improved variety that bears blossoms as large as a bushel basket

I think I read somewhere that the Californians claim there is only one locality in California where these artichokes can be produced successfully, and that spot is rather holding the trade. I do not see why they can not be grown in Florida, and I am planning to make a trial of it.

The sunflower and artichoke are closely related. In fact, the blossoms of the artichoke and helianti look very much like a small sunflower.

In our August number for 1919 I gave you some extracts from the dairy papers showing that the sunflower stalks, when cut at the right time, promise to surpass corn or anything else as a plant for filling silos and helping dairymen in giving the world milk (instead of beer) and butter and cheese. I was very enthusiastic about it. But our Ohio Experiment Station rather discouraged me. While they admitted its value for dairy purposes they had not succeeded in getting nearly as many tons per acre as they got of corn. But our dairy periodicals *now* report that in many localities sunflower silage not only gives more tons to the acre, but produces more and better milk, cheese, etc.; and I believe it is pretty well settled that in many places where sunflowers succeed they are found to be preferable to corn for filling silos. For one thing they will stand more frost in cold weather than corn, as I have demonstrated, and which I reported in 1919 and 1920. And you may recall that there is a spot in California where they grow sunflower *seeds* not only by the ton but by the *carload*; and the May number for 1920, page 300, gives a report from it as a honey plant, some colonies producing 100 pounds of sunflower honey. In Russia, where the Russian sunflower seed comes from, they save the seed to such an extent that oil is expressed, and this oil is said to be a very good substitute for butter. My impression is, however, that the oil from no plant nor animal can equal the regular old-fashioned cow's butter. Can any of our readers tell us more about it?

Now, friends, with the above long preface I am just ready to tell my story.

About the first of July I found a notice in the National Stockman and Farmer of a new and improved artichoke, and I at once addressed the writer of said article for further particulars; and it was one of my "happy surprises" to receive very promptly the letter below:

My kind friend Root:

May I tell you it is like a benediction to get such a letter from my friend and teacher of 40 years' standing.

I planted every tuber I had of the French White Jerusalem artichoke, and they are in their rapid growth now. I looked to see if new tubers had formed but there are none yet. They grow like the potato, and now they are just sending out the white underground stems on which the tubers will form a little later. This tuber has been developed on the farm of ex-Congressman Sibley of Franklin, Pa., and the results there attained are almost beyond belief. I am writing Mr. Sibley to send you his report on the work done.

The common wild tuberous artichoke I always grew but never thought highly of it, as it lacks productiveness and the tubers are small and very uneven. This improved tuber is very large and extra-smooth, and a production of 850 bushels to the acre on a large scale is indeed wonderful.

and the tops used as a cattle feed amount to over four tons to the acre. L. W. Lighty.

East Berlin, Pa., July 7, 1922.

And soon after, I received another exceedingly kind letter from friend Sibley together with a circular in regard to the new artichoke, from which I make clippings as below:

Mammoth French White Jerusalem Artichoke.

As the student of horticulture knows, the artichoke and the sunflower are congeners, belonging to the helianthus family. Both are indigenous to America, and while it may be doubted if their northern and southern limits are clearly defined, we do know that the eastern and western limits extend from ocean to ocean.

Several years ago the horticulturists of France, taking the American Jerusalem artichoke, greatly improved the tuber of this plant in size, color, flavor and prolific yield, without apparently in any way impairing its hardiness. The improved product is known, and may be found described in Bailey's Encyclopedia of Horticulture, as well as in his Cyclopedia of American Agriculture, as the Mammoth French White Jerusalem artichoke.

Recalling to memory my boyhood days, I secured some seed of this French artichoke for our table use only. The tuber carries a much higher percentage of protein than the potato; otherwise, as shown by Professor Bailey, its chemical character is similar. No vegetables obtainable during the winter months have proved more welcome to our table; we have yet to find anyone who does not like this improved artichoke, for when properly cooked the flesh is very white and possesses a somewhat sweet and nutty flavor.

Observing the luxuriant growth of stalk of the artichoke with its fine, delicate and abounding leafage, it occurred to me that the stalk as well as the tuber might be valuable. Therefore, cutting some of the green stalks, and at the same time cutting stalks of green corn, we placed them before our horses. Invariably the horses would leave the green corn fodder for the stalks of the artichoke. We then tried them on our sheep and swine with the same results. Our few elk and buffalo seem to like them better than any other food we can place before them. Our cows were less unanimous, the jury splitting six to six.

The palatability of the artichoke as compared with that of its relative, the sunflower, was surprising. Where the sunflower with its rough stalk and extremely coarse fiber would be neglected, the artichoke would be eaten with avidity.

This year, Mr. Hanna, the manager of River Ridge, had our head gardener and the assistant head gardener in several different portions of the field dig enough hills to fill a bushel basket and make an estimate of the yield of the tubers. Our head gardener reported slightly in excess of 1200 bushels per acre. The assistant head gardener made his separate report, showing in excess of 800 bushels per acre, but stating that he thought his report a very conservative one. Being for the last 12 years an invalid under the constant care of a trained nurse, I requested Prof. H. H. Haverstick, our county farm bureau agent, to make a verification test of his own, and his sworn statement of a yield of 850 bushels per acre will be found in an appendix attached thereto, also the the sworn statement of Mr. C. L. Goodwill, one of the most prominent and highly esteemed farmers of this section, showing a yield of 967 bushels per acre.

Unlike the sunflower, it has a very fine leaf. Its foliage is profuse, and altho the plant attains a height as great as 12 feet, it is bushy and bunchy in its growth; and the stalks of our ensilage range from one-eighth of an inch to one-half inch in diameter.

Through the winter we have fed the tubers to our horses, cows, sheep and swine, as well as to our poultry. When we place the artichokes in the boxes where the horses are eating their oats or corn, they will leave the grain to eat the tubers. The pigs and sheep will do the same, tho the cows will not always do so. It would not be fair to say that our milk yield has averaged greater than ever before simply from the artichokes, but we know that the average has been higher.

It is with some satisfaction that we feel ourselves allowed to elect whether we shall have tubers or fodder—or both the same season. (In those fields from which our ensilage was harvested, tho the tubers are not so large, we had a crop of 535 bushels per acre.)

We have found that our artichokes do better or at least as well planted in the fall as in the spring. Even when no other crop could be safely put into the ground, we can plant our artichokes and know that the hard freezing of the ground or drouth will not destroy the planting.

It is also a source of satisfaction to be able to dig this crop of tubers either in the fall or in the spring, for freezing seems in no manner whatever to prove injurious to them. With us, during some winters the thermometer will register from zero to twenty-five degrees below for a week or ten days in succession. Fearing no damage, we may store this crop more easily where it was planted than elsewhere, with the consequent saving in labor of rehandling.

Personally, I have not yet reached that point where I would recommend anyone to plant so extensively as we have done; but my faith in the value of it does permit me to suggest that each farmer plant enough in his garden for table use and raise enough seed so that another year at small cost he may use them if he desires.

What we do know is that the artichoke will, when grown as hay or ensilage, kill out most other weeds on our farm, for its shade is so dense that the other weeds are smothered. It is the only crop we have ever grown that takes care of itself long enough to let the farmer straighten up and take all the kinks out of his back at one time.

I deeply regret that heretofore we have not tested its pasture value. Yesterday we turned our cattle and sheep into our pasture fields where about an acre in each field had been planted this spring to artichokes. Though this pasture field was rich in clovers and many other grasses, both cattle and sheep absolutely neglected all but the artichokes, the plants of which were 12 to 15 inches high.

Since writing the above we have put in five additional acres in our pasture, so that now our planting is 95 acres.

After reading the above you may be sure I made friend Sibley at "River Ridge Farm" a visit; and said visit was one of the bright spots in my busy life. But this artichoke article has spun out so, much to my regret, that an account of it will have to go over to our November issue. I might say to you, however, that the new artichoke is already growing on our grounds in Medina, and I am at present very happy in watching the growth "morning, noon and night."

A New "Declaration of Independence" Needed.

The clipping below comes from the Independent. Is it not high time that we as a nation begin to consider the matter?

Labor-union coercion and oppression have spread too far already; and in too large a degree what we have called the American principle of a free man's right to work where he will has been reduced to a bit of empty rhetoric. It is time, not merely for a new declaration, but for a new and practical assertion, of American independence of such an oppression

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FOR SALE—White clover honey in 60-lb. cans—none finer. J. F. Moore, Tiffin, Ohio.

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FOR SALE—25 tons fine extracted white clover honey at 12c. Comb honey prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

FOR SALE—White, amber and buckwheat honey in new 60-lb. cans and 5 and 10 lb. pails. H. B. Gable, Romulus, R. D. No. 2, N. Y.

FOR SALE—Extracted white clover honey. 1922 crop, new tins, two 60-lb. cans to case, at $15.00 per case. J. G. Burtis, Marietta, N. Y.

Wisconsin-Hassinger-Clover-Basswood-Extracted-Honey. Qualifies superior flavor and density. E. Hassinger, Jr., Greenville, Wis.

FOR SALE—12,000 lbs. of choice white clover honey, well ripened, put up in new 5 and 10 lb. pails. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—Choice new clover extracted honey put up in new 60-lb. cans. Write for prices, stating quantity desired. W. M. Peacock, Mapleton, Iowa.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gal. barrels. Samples and price on request. A. I. Root Co., 23 Leonard St., New York City.

FOR SALE—White clover honey in 60-lb. cans and 5-lb. pails, this year's crop, none better. Write for prices. Sample, 10c. F. W. Summerfield, Waterville, Ohio.

GOOD white honey. Tell us what you want Price and sample on request. A. I. Root Co., 230 W. Huron St., Chicago, Ill.

FOR SALE—Clover extracted, one 60-lb. can, $7.50; two 60-lb. cans, $14.40; buckwheat, one 60-lb. can, $5.40; two 60-lb. cans, $10.20. Also comb honey. J. J. Lewis, Lyons, N. Y.

FOR SALE—Very best clover-basswood honey. Produced in new combs. Packed in new containers. 60-lb. cans and 5-lb. pails. Sample, 20c. Write for prices. A. C. Ames, Weston, Ohio.

RASPBERRY HONEY—In 60-lb. cans, 2 in a case for $14.40; one in a case, $7.50. Sample by mail, 20c, which may be applied on order for honey. Elmer Hutchinson & Son, Lake City, Mich.

FINEST quality clover honey in 60-lb. cans, two to a case at $15 a case; also buckwheat honey in 60-lb. cans, 10c a pound. Sample, 10c. All f. o. b. here. Edw. A. Reddout, Box 205, New Woodstock, N. Y.

FOR SALE—Finest quality white clover extracted honey, well ripened and of fine flavor, put up in 60-lb., 12-lb. and 2½-lb. cans, and 10 and 5 lb. pails. R. C. Ortlieb, 29 Van Buren St., Dolgeville, N. Y.

OUR 1922 crop of white clover extracted honey is now ready for the market. New cans and cases. Say how much you can use, and we will be pleased to quote you our very lowest price. E. D. Townsend & Sons, Northstar, Mich.

FOR SALE—No. 1 white comb honey, $6 per case of 24 sections, six or eight cases to carrier, light and dark amber extracted in 60-lb. cans, 10c per lb.; amber baker's honey in 50-gal. barrels, 8c per lb. H. G. Quirin, Bellevue, Ohio.

CHOICE extra fancy white clover honey in new 60-lb. cans, 120 lbs. net, $15. Sample, 20c. Write for prices on larger quantities. Also 100 cases extra fancy Hubam clover honey same price. Edw. A. Winkler, R. D. No. 1, Joliet, Ill.

FOR SALE—A1 diamond clear sweet clover extracted honey, in 60-lb. cans, 10½c per lb.; in 5 and 10 lb. friction-top pails, 15c per lb. This honey is guaranteed to be equal to any honey in U. S. in body, color and flavor. Virgil Weaver, Box 311, Moville, Iowa.

FOR SALE—Choice clover extracted honey in new 60-lb. cans and cases. Write for prices on carload or case lots; comb honey in Danz. and beeway sections. Packed in six or eight case carriers. Quality unexcelled. J. D. Beals, Oto, Iowa.

CLA-FO-NY Quality (liquid or crystal) honey. Well ripened by the bees, free from wax or pollen. Clover, case 2 60-lb. cans, $16; case 15 5-lb. pails, $12.75. Buckwheat 2 60's, $10.80; 15 5's, $9.75. Sample, 20c. 5 case lots, 5% off. Clarence Foote, Delanson, N. Y.

FOR SALE—We can supply honey to beekeepers or other roadside sellers who may need to buy beyond their own supply, packed as follows: 2½-lb. friction top tin cans, 2 dozen in case; 5-lb. friction top tin cans, 1 dozen in case; 10-lb. friction top tin cans, ½ doz. in case; 60-lb. square cans, 1 to case; 60-lb. square cans, 2 to case. We have the following kinds of honey: Standard white, alfalfa, sweet clover, California sage, California orange, light amber, amber. Write for prices. The A. I. Root Co., Medina, Ohio.

OUR 1922 crop extracted honey is a very fancy grade, water white clover, which was left on the hives until thoroughly cured by the bees before extracting, making it very heavy bodied. This thick, rich honey is all packed in new 60-lb cans, two to the case. Of course, we have to ask a little more for honey of this quality than ordinary honey. When in need of a good article send a dime for a sample, and address your inquiry to D. R. Townsend, Northstar, Mich.

HONEY FOR SALE In 60-lb. tins, water white orange, 13c; white sage, 12c; extra L. A. sage, 10½c; buckwheat, 10c, etc. Hoffman & Hauck, Woodhaven, N. Y.

My new crop of comb and extracted honey, unexcelled for quality. Prompt service and satisfaction guaranteed. Sample, 15c, to apply on first order. O. W. Bedell, Earlville, N. Y.

FOR SALE—A very good grade of buckwheat comb honey, will average 22 lbs. to the case of 24 sections. A little goldenrod in some of it. $4.25 per case, or four or more at $4.00 f. o. b. Andover, Ohio. Edgar Williams, Pierpont, Ohio.

HONEY AND WAX WANTED.

WANTED—Comb and extracted honey. Correspondence solicited. John O. Hightower, Excelsior Springs, Mo.

WANTED—Honey in ton lots, comb and extracted of all kinds. Send sample. State price. Joe Mlinarits, 8927 Keller St., Detroit, Mich.

BEESWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED—Comb and extracted honey, carload and less. All kinds of honey and beeswax for sale. Walter C. Morris, 105 Hudson St., New York.

WANTED—Honey in ton lots or less. Comb, and white to amber extracted of good flavor for bottling. Send sample and price to S. G. Crocker, Jr., Roland Park, Baltimore, Md.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade price, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

WANTED—Beeswax. We are paying 1c and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address so we can identify it immediately upon arrival, and make prompt remittance. The A. I. Root Co., Medina, Ohio.

FOR SALE.

HONEY LABELS—New design. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE—Used cans, about 20 cases, 2 60s, 60c per case f. o. b. here. Wm. A Cook, Attleboro, Mass.

FOR SALE—Used honey cans in cases, good condition. S. T. Fish & Co., 163 W. S. Water St., Chicago, Ill.

FOR SALE—"SUPERIOR" FOUNDATION, "quality unexcelled." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

PORTER BEE-ESCAPES save honey, time and money. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

WORTH $$$ to you. Make your own frames. Save one-half. Non-sag thin top-bar. New feature. Sample, 10c. D. S. Hall, Marshfield, Vt.

FOR SALE—At a bargain. 200 Texas aluminum honeycombs, new. 50 aluminum honeycombs, slightly used. L. L. Forehand, Ft. Deposit, Ala.

FOR RENT—Florida bee farm, share crop, no severe cold, long-producing season. Excellent chance. C. M. Davis, 4537 N. 13th St., Philadelphia, Pa.

FOR SALE—Complete files of Gleanings (except 3 numbers) from first number to 1918. Files kept by G. M. Doolittle. P. G. Clark, Marietta, N. Y.

FOR SALE—1000 10-frame comb honey supers, Lewis "Beeware" new this summer, well painted, 600 of them filled with sections and foundation. 12,000 sections, 4¼ x 1⅞; 125 lbs. Dadant's thin surplus foundation; 800 shipping cases, two-tier with glass. Will sacrifice for quick sale. Write now! Clyde V. Fisher, Joliet, Montana.

WANTS AND EXCHANGE.

WANTED—Comb-back chairs, also old rockers and chests with drawers. John Rick, 434 Oley St., Reading, Pa.

WANTED—Foundation mill. Rolls must be in perfect condition. The Stover Apiaries, Mayhew, Miss.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

FOR SALE—Good second-hand 60-lb. cans, two cans to case, boxed, at 60c per case, f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., Cincinnati, Ohio.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa, Council Bluffs, Iowa.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

WANTED—To hear from parties having large quantities of beeswax for sale. Also want old combs and cappings. Will render for 5c per pound and pay the highest market price in cash or trade. F. J. Rettig, Wabash, Ind.

OLD COMBS WANTED—Our steam waxpresses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1922 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Ill.

FOR SALE OR TRADE—All or part of 510 colonies of Italian bees all in four-story 10-frame Standard L. hives, full sheets, wired combs. No disease. Bees located in four yards, two complete power 8-frame Root extractor outfits, all in A1 shape, lots of extras. These apiaries averaged 120 pounds (a case) to the colony, spring count, of fine sage honey. Can give part time, or will trade for bees in Utah. Apiaries located on S. B. National forest which protects from overstocking. 10c a colony yearly rental. A good chance for some one who wants a paying business, and home market in Santa Barbara, Calif. Address C. Elmer Morgan, Box No. 641, care R. G. Forsyth, Santa Barbara, Calif.

BEES AND QUEENS.

FOR SALE—11 healthy colonies. T. O'Donnell, 1147 S. Springfield Ave., Chicago, Ill.

HARDY Italian queens $1.00 each. W. G. Lauver, Middletown, Pa.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

FOR SALE—200 colonies. 4 locations. 4 main crops, $1250. R. H. Yearnshaw, Maxwell, Calif.

GOLDEN Italian queens, untested, $1.00; six, $5.00. E. A. Simmons, Greenville, Ala.

AM now booking orders for package bees with queens. Get my prices. J. J. Scott, Crowville, La.

FOR SALE—100 colonies of bees in 8-frame hives. Good condition. C. H. Cobb, Belleville, Ark.

FOR SALE—Bees, 20 colonies, no disease, in standard bodies, Hoffman frames. J. E. Venard, Wilmington, Ohio.

BEES FOR SALE—26 swarms, all in new Jumbo hives, $188.50 for the lot. W. B. Brorein, Wapakoneta, Ohio.

FOR SALE—150 colonies bees, 20 acres fertile Florida land in tupelo honey section. Reason. W. I. Keiter Cherrydale, Va.

FOR SALE—75 stands Italian bees in good condition. Also fixtures to run a first-class apiary. W. P. Turner, Peoria Heights, Ill.

LATE QUEENS—For late queens send me the order. Pure three-band Italians. No disease. Low prices. D. W. Howell, Shellman, Ga.

FOR SALE—Bright Italian queens, 1, $1.00; 12, $10.00; 100, $75.00. Safe arrival guaranteed. T. J. Talley, Greenville, R. D. No. 3, Ala.

FOR SALE—100 to 200 colonies of bees (Italian) in perfect condition for winter, standard 10-frame hives. E. L. Lane, Trumansburg, N. Y.

PACKAGE BEES—$1.50 per pound. Untested Italian or Carniolan queens, $1.25 each. Circular free. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

FOR SALE—July 1, Buck Goldens, 1 queen, $1.00; 6 queens, $5.00; 12 queens, $10.00; virgins, 40c. W. W. Talley, R. D. No. 4, Greenville, Ala.

FOR SALE—60 colonies Italian bees, A1 condition, with comfortable home, suburbs Denver, $2800. C. S. Everett, 1162 S. Logan, Denver, Colo.

"SHE-SUITS-ME" queens, line-bred Italians. $1.50 each; 10 to 24, $1.30 each. See back cover of January number. Allen Latham, Norwichtown, Conn.

FOR SALE—Early package bees, nuclei and queens. We handle 1800 colonies. Shipping season March 1 to June 1. Loveitt Honey Co., Phoenix, Ariz.

GOLDEN Italian queens for sale. One queen, 90c; 6 queens, $5.00; 12, $9.00; 100, $65.00. Safe arrival and satisfaction guaranteed. J. F. Rogers, Rt. 3, Greenville, Ala.

QUEENS—For summer and fall. Write for prices and guarantee, state quantity desired and when shipment wanted. I can fill your orders. J. L. St. Romain, Hamburg, La.

POOLE'S three-banded Italian queens are guaranteed to arrive safely and give satisfaction. Untested, 80c each; 25 or more, 75c; tested, $2.00. Rufus Poole, Greenville, Ala.

WE are booking orders now for spring delivery for the famous "Colorado Queens." Send your order early so as to be sure to get your queens. C. I. Goodrich, Wheatridge, Colo.

QUEENS—Golden or three-banded Italians of highest quality. Every one guaranteed or your money back. 75c each; 6, $4.00; 12, $8.00. G. H. Merrill, R. D. No. 5, Greenville, S. C.

BEES BY THE POUND — Also QUEENS Booking orders now. FREE circulars, giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas. E. B. Ault, Prop.

TRY MY CAUCASIAN OR ITALIAN three-frame nuclei at $5.00 each, with untested queen. Tested, $1.50; untested, $1.00, of either kind. No disease. Peter Schaffhauser, Havelock, N. Car.

GOLDEN QUEENS that produce large beautiful bees, solid yellow to tip, very gentle and prolific. Untested, $1.25 each; select tested, $3.00 each; breeders, tested, $5.00. Dr. White Bee Co., Sandia, Texas.

FOR SALE—Leather-colored Italian queens, tested, until June 1, $2.50, after $2.00. Untested, $1.25; 12, $13.00. ROOT'S GOODS, ROOT'S PRICES. A. W. Yates, 15 Chapman St., Hartford Conn,

FOR SALE—The Doolittle and Clark apiary, consisting of 80 colonies, including house, barn, shop and machinery, poultry house, bee-cellar, etc. For full particulars, address P. G. Clark, Borodino, N. Y.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, $1.00 each; $10.00 per dozen; $75 per 100. Pure mating, safe arrival and satisfaction guaranteed.

BRIGHT ITALIAN QUEENS, $1.00 each, 10% less in dozen lots. Pure mating, safe arrival and reasonable satisfaction guaranteed in U. S. and Canada. Write us for prices on package bees. We have them in season. Graydon Bros., Rt. 4, Greenville, Ala.

LET me save you money on your 1923 package bees, nuclei and queens. Book early and not be disappointed. Queens balance of season, 85c; 6 or more, 65c; after Oct. 20, $1.00 straight. Everything guaranteed. J. L. Morgan, Tupelo Honey Co., Columbia, Ala.

SPICER'S three-band Italian queens by return mail. If you are interested in improving your stock and getting larger returns from your bees. head your colonies with these queens. Untested, $1.00; 6, $5.50; 12, $10.00; tested, $2.00 each. Robt. B. Spicer, Wharton, N. J.

TESTED QUEENS—One-year-old tested three-banded Italian queens, descended from the famous Moore strain. Were reared in full colonies and are very fine queens. Price, $1.50 each; 6 for $8.50; 12 for $16.00. Safe arrival and satisfaction guaranteed. Elmer Hutchinson & Son, Lake City, Mich.

FOR SALE—DEPENDABLE GOLDEN ITALIAN QUEENS add beauty to your bee quality Virgins, 60c; 5 for $2.50; untested, $1.00; 6 for $5.00; select untested, $1.50; 6 for $6.50; tested $2.50; 5 for $10.00; selected, $3.00; breeders $5.00. Safe arrival and quality guaranteed. S. H. Hailey, Pinson, Tenn.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness and perfect markings. Price, $1.25 each, 12, $1.00 each. Special prices on larger orders. Send for circulars. J. H Haughey Co., Berrien Springs, Mich.

FOR SALE—1000 colonies bees. 10-frame Langstroth hives, fully equipped for comb and extracted honey, auto truck, big warehouse, located at Laurel, Montana, one of the best honey-producing sections in Montana; $7.50 per colony, with or without locations. Weber Brothers Honey Co., Blackfoot, Idaho.

HOLLOPETER'S ITALIAN QUEENS are bred up to a standard and not down to a price, yet price is low where quality and service count. Select untested each, $1.25; 6, $7.00; 12, $13.00; 25, $25.00. Write for mailing date and price on larger lots for requeening. Pure mating, no disease, safe arrival and satisfaction guaranteed, J. B. Hollopeter, Rockton, Pa.

PLACE your early orders now for queens and package bees. Golden Italian and Caucasian queens, April 1 to May 15, 1923. Untested, 1, $1.50; 12, $15.00; 25, $1.00 each; 2-lb. package bees, $5.00; 3-lb. package, $6.50. 20% off above prices after May 15. Golden Italian breeders, $15.00 to $20.00. Safe arrival guaranteed. Terms, 25% with order. Sarasota Bee Co., Sarasota, Fla.

PACKAGE BEES FOR 1923—Three-band Italians, bred for business. A 2-lb. package of the Yancey hustlers with a select untested queen for $5.00; 25 or more, $4.75 each. Attractive prices on large lots. One-fifth cash books your order. Order early and make sure of shipping dates. We do not accept more orders than we can fill promptly. Caney Valley Apiaries, Bay City, Texas. Yancey Bros., owners.

BEES FOR SALE in lots of one colony up to 100 or more, as desired, or a series of outyards, including small house in town, 32-foot honey-house, 8-frame power extractor, engine, sawtable, 150 new hives in K. D., Ford auto, and various other items required in this line of business. Past 19 years I've produced upwards of 75 tons of honey in this locality. If whole outfit is wanted it can be bought as a going concern, by paying 25% down, and balance remain one, three or five years at 7% with acceptable backing of notes. Cause for selling, doctor's insistance, age, ill health, and laziness on my part. Correspondence solicited. A. W. Smith, Birmingham, Mich.

MISCELLANEOUS.

TYPEWRITERS—All makes slightly used, $20 up. Easy payments. Free trial. Express prepaid. Guaranteed two years. Payne Company, Rosedale, Kansas.

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MEDICINAL roots and herbs are very profitable to grow. We especially recommend growing Golden Seal which with good care will yield as high as $10,000 per acre for each crop. It takes several years to mature but will average $1000 a year. Special Crops, a monthly paper, tells how. Sample copy, 10c. $1.00 per year. Address Special Crops Pub. Co., Box "G," Skaneateles, N. Y.

TOO LATE TO CLASSIFY.

FOR SALE—12,000 lbs. fancy white clover honey, in 60-lb. cans and 5-lb. pails. Sample, 10c. W. H. Mays, Goshen, Ind.

FOR SALE—Michigan clover honey. Prices right. 60 lbs., 10 lbs., 5 lbs. Fancy comb. Write us. Michigan Honey Producers' Exchange, 5493 Grand River Ave., Detroit, Mich.

FOR SALE—No. 1 white comb honey, 24 sections per case, $5.50 in carrier, 8 cases per carrier, f. o. b. Penfield, Ill. Also white clover extracted honey in 60-lb. cans. J. F. Coyle, Penfield, Ill.

FOR SALE—Extracted white clover honey of finest quality, rich and delicious and thoroughly ripened in extra strong new 60-lb. cans at 16c per lb. Repeated orders from well-satisfied customers are proof of the quality and purity of this honey. Cash must accompany each order. Liberal sample sent for 20c. G. A. Barbisch, La Crescent, R. D. No. 1, Minn.

WANTED—Comb and extracted honey. Fancy yellow wax. C. J. Morrison, 750 Cottage Grove Ave., South Bend, Ind.

WANTED—Fancy comb, all grades of extracted. Send samples, quantity, prices. Prompt payment. Michigan Honey Producers' Exchange, 5493 Grand River Ave., Detroit, Mich.

TRADE NOTES.

Inasmuch as we expect to discontinue listing the following articles in our general catalog we are offering them at a big reduction in order to close out present stock:

15	C472802—Root capping-melters, price each	$12.00
15	C472803—Dadant uncapping-cans, price each	$13.00
14	C472808—Boardman solar wax-extractors, price each	$19.00
70	C261602—Metal top telescope cap cover with inner cover, 8-frame, K. D., price each	1.50
80	C262606—Metal top telescope cap cover with inner cover, 10-frame, K. D., price each	$1.60
3	C261601—Metal top telescope cap cover with inner cover, 8-frame, nailed and painted, price each	$1.90
3	C262601—Metal top telescope cap cover with inner cover, 10-frame, nailed and painted, price each	$2.00
100	C271802—Demuth winter cases, complete, K. D., price each	$0.50
4	C271701—Dovetailed winter cases, 8-frame, with wood cover, complete, nailed and painted, price each	$2.75
1	C272701—Dovetailed winter case, 10-frame with wood cover, complete, nailed and painted, price each	$3.00
1	C271702—Dovetailed winter case, 8-frame, with wood cover, complete, K. D., price each	$1.25
2	C492001—One and one-half horse-power Busy Bee gasoline engines. Price, each	$35.00
5	one-half-inch honey pumps. Price each, complete with fittings, $7.00; complete without fittings	$5.00
37	C499121—Dadant electric wire imbedders. Price, each	$0.75
100	Bee Models—The Anatomy of the Bee. Price, each	$.25
100	C490561—Crate staples, 1½ x ¾-inch, price per pound	$0.12

Above prices are strictly net f. o. b. Medina, Ohio.

Send all orders for the above direct to The A. I. Root Company, Medina, Ohio.

STATEMENT OF OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., OF GLEANINGS IN BEE CULTURE, PUBLISHED MONTHLY AT MEDINA, OHIO, REQUIRED BY THE ACT OF AUGUST 24, 1912.

Editors, Geo. S. Demuth and E. R. Root, Medina, Ohio; Managing Editor, H. G. Rowe, Medina, Ohio; Publishers, The A. I. Root Company, Medina, Ohio. Stockholders holding 1 per cent or more stock, as follows: Calvert, J. T.; Calvert, Maude R.; Calvert, Howard R.; Root, A. I.; Root, E. R.; Root, H. H.; Root, Mabel K.; Root, Susan; Trustees of Employees Pension Sharing Fund; Trustees of Employees Pension Fund. Mortgagee holding 1 per cent or more of real estate mortgage covering New York property, E. T. Wilson Estate. H. G. ROWE, Mng. Editor.

Sworn to and subscribed before me this 25th day of September, 1922.

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A Splendid Collection Of Early Spring Bulbs 48¢

This is simply to introduce our wonderful stock of bulbs—just received from Holland—and to acquaint you with our service and high business standards. These bulbs are strictly first-grade stock, big, hardy. *But they must be planted this fall.* Upon receipt of 48c—stamps or money order—I'll send you by parcel post, prepaid, your choice of one of the following collections:

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2. One dozen lasting and brilliant red tulips, or
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Make your selection and order *now*. I've hundreds of other kinds, too. Also fruit, shade and evergreen trees, and bush fruits. Priced remarkably low. Free catalog.

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THREE-BANDED GOLDENS

Owing to the great demand for our queens with prospects of fine weather, we will continue to rear queens till late in October, and offer our fine strain of honey-gatherers till November 1st or later. If you have a queenless colony or old queen of no worth, October is your last chance this season to replace her. For quick service send us your order. Our ad will not appear again till early next season.

Quality Queens.	October Prices.
Untested, 1 to 12	$0.85 each
Sel. Untested, 1 to 12	1.15 each
Sel. Tested	2.00 each

Wings clipped free on request. Entire satisfaction and safe arrival guaranteed in U. S. and Canada.

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That fill the supers quick
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They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc. I am now filling orders by return mail. Untested queens $1.25; 6, $6.50; 12, $12. Select Untested. $1.50; 6, $8.00; 12, $15. Safe arrival and satisfaction guaranteed.

J. P. MOORE, Queen Breeder
Route 1, MORGAN, KENTUCKY.

ACHORD'S THREE-BANDED ITALIAN

QUEENS

We can supply you up to Oct. 20th. Shipment by return mail.

Untested	$0.75 each
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No disease. No honey used in shipping cages. Satisfaction guaranteed.

W. D. ACHORD
FITZPATRICK - - ALABAMA.

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We just received several carloads of beautiful Honey. Roadside beekeepers and those supplying a family trade will do well to take advantage of these bargain prices:

In 60-lb. Tins—White Orange, 13c lb.; White Sage, 12c lb. Extra L. A. Sage, 10½c lb.

GLASS AND TIN HONEY CONTAINERS.

2½-lb. cans, crates of 100	$4.50
5-lb. pails (with handles) crates of 100	7.00
10-lb. pails (with handles), crates of 50	5.25
60-lb. tins, 2 per case, new $1.20 case; used 25c	

WHITE FLINT GLASS, WITH GOLD LACQUERED WAX LINED CAPS.

8-oz. honey capac., $1.50 per carton of 3 doz.
16-oz. honey capac., $1.20 per carton of 2 doz.
Qt. 3-lb. honey capac., 90c per carton of 1 doz.

HOFFMAN & HAUCK, INC.
Woodhaven, New York

Queens - Golden - Queens

Have you secured all you need? I have them as fine as you can secure anywhere at a reasonable price. Untested, $1.00; six, $5.00; 12, $10. If they don't give you satisfaction and you write to me, I will make it satisfactory to you.

E. A. SIMMONS, GREENVILLE, ALA.

INDIANOLA APIARY offers Italian Bees and Queens for following prices: Untested Queens, $1.00 each; Tested Queens, $1.50 each. Bees, per lb., $2.00. Nucleus, $2.00 per frame. No disease. Bees inspected.

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Valdosta, Georgia.

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Practice in Patent Office and Court.
Pat. Counsel of The A. I. Root Co.
CHAS. J. WILLIAMSON,
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MODERN APIARY FOR SALE.

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Am moving to California, and wish to dispose of my entire apiary at once. All supplies housed in new honey-shop of 2 stories. Power special 4-basket extractor, pump, storage tank, etc., all new. Lewis Beeware hives and supers on hand now enough to run 200 swarms with drawn combs. Forty swarms in yards now. Call or write and investigate. NO DISEASE.

A. E. BANKS,
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Originated from the world-famous Moore strain of Italians. Absolutely first quality and fully guaranteed, no disease. Satisfaction and safe arrival.

Untested: 1, $1.25; 6, $6.00; 12, $11.00.
Sel. Unt.: 1, $1.75; 6, $8.00; 12, $15.00.
Circular free.

A. H. NEWMAN, Queen-Breeder.
Morgan, Kentucky.

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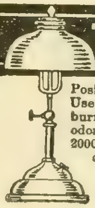

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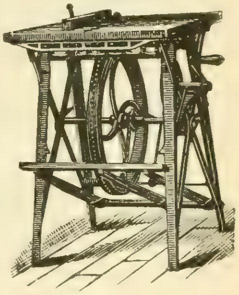

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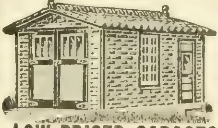

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FREE Samples & Roofing Book

MARKETS (Continued from page 625).

Following is a part of the tabulated figures on the honey crop, condition of the colonies and condition of the honey plants for the United States, based on reports collected by the U. S. Department of Agriculture and published in "Weather, Crops and Markets," issued by the Department The figures showing the condition of the colonies and the honey plants for the various states are omitted here for lack of room. For the United States the condition of the colonies on Sept. 1 compared with normal was 95.1% as compared with 90.9% for 1921 and 91.2% for a five-year average. The condition of the fall honey plants Sept. 1, as compared with normal, was 76.2%, as compared with 77% in 1921 and 78.4% for a five-year average.

This table should be compared with that on page 533 August issue.

	Av. yield to Sept. 1 of surplus honey per colony (spring count)			Per cent of total surpl. honey usually produced by Sep. 1
State.	1922 Lbs.	1921 Lbs.	Av.1916-1920 Lbs.	Per cent.
Maine	30	35	35	82
New Hampshire	32	34	36	90
Vermont	45	53	46	96
Massachusetts..	31	36	36	77
Rhode Island..	50	0	42	97
Connecticut ...	35	39	42	85
New York.....	51	60	57	89
New Jersey....	33	38	39	89
Pennsylvania..	41	40	46	82
Delaware	20	0	22	85
Maryland	30	27	50	93
Virginia	30	17	38	90
West Virginia..	28	32	33	89
North Carolina.	24	12	30	90
South Carolina.	19	14	26	80
Georgia	27	29	29	86
Florida	55	36	55	94
Ohio	45	70	41	90
Indiana	53	57	35	80
Illinois	65	35	38	77
Michigan	56	65	49	91
Wisconsin	65	37	52	94
Minnesota	54	54	56	86
Iowa	70	40	57	90
Missouri	60	37	34	79
North Dakota..	..	..	44	99
South Dakota..	85	74	69	92
Nebraska	58	55	46	92
Kansas	45	43	29	87
Kentucky	40	43	32	80
Tennessee	15	23	26	84
Alabama	30	28	33	91
Mississippi ...	30	36	30	90
Louisiana	45	57	36	95
Texas	22	50	37	85
Oklahoma	40	28	32	86
Arkansas	35	30	24	84
Montana	60	70	85	91
Wyoming	65	80	89	88
Colorado	44.5	46	51	93
New Mexico...	65	45	48	82
Arizona	42	46	62	94
Utah	50	60	78	93
Nevada	47	85	60	..
Idaho	65	80	60	97
Washington ...	75	50	53	92
Oregon	80	55	50	99.5
California	74	32	58	94
United States	50.0	40.5	42.7	87.1

Special Foreign Quotation.

LIVERPOOL.—The market for honey has been dull during the past month. The value of extracted honey in American currency is about 9 cents a pound. The market for beeswax is also slow, the price at today's rate of exchange being about 31c pound. Taylor & Co.

Liverpool, England, Sept. 6.

The A. I. Root Company's Quotation.

Since our last quotation we have paid the following prices in carlots f. o. b. shipping points: Water white extracted white clover, from local producers, with low freight rate, 10½ per lb.; Idaho white clover with trace of sweet clover or alfalfa, 8½c; western sweet clover and alfalfa, 8c; white sweet clover or alfalfa comb honey, fancy, $3.75 per case; No. 1, $3.50; and No. 2, $3.25. These comb-honey quotations are on a basis of $4.50 per case for fancy laid down in Medina; $4.25 for No. 1, and $4.00 for No. 2. We have just at present sufficient stocks for our needs.

Talks to Beginners.—Continued from page 665.

the packing. Finely crushed forest leaves, dry sawdust, fine planer shavings, wheat chaff or clover chaff can be used for packing the space between the hive and the outer box. The entrance should be reduced during cold weather to about ⅜ by 1½ or 2 inches, as described in another article in this issue. The bees can also be packed for winter in tarred paper illustrated on pages 644 and 645 in this issue.

All uniting, feeding and winter packing should be done during October, especially in the North, for these cannot well be done next month.

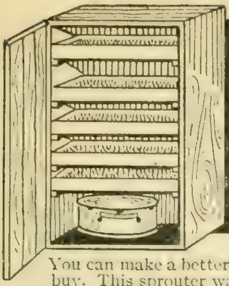
Beginners often ask if it would not be well to carry their bees into a shed during the winter. This should not be done. The bees will be better off out in the open where they can have the benefit of the winter sunshine than if placed in an open shed. Neither is it advisable to place loose material, such as fodder, about the hive, which would permit the wind to blow through but cut off the sunshine. Protection of this kind would be somewhat like placing the blankets on the roof, expecting them to keep one warm in bed. The protection should be placed immediately around the hive where it will do the most good, and the hive should be located if possible where the sun can shine on it, in order that the benefits of the winter sun may be secured.

In the extreme northern part of the United States and in some parts of Canada many bees are wintered in cellars. Those who live in the extreme north and have a badly exposed location for the apiary may do well to put their colonies into the cellar next month and leave them there until the latter part of March or the first of April; but, if a protected location can be had, beginners will usually have better results by wintering their bees outside in well-protected hives.

BOOKS AND BULLETINS.

C. P. Dadant has revised and largely rewritten Langstroth on the Honeybee, thus bringing this great classic down to date. The new edition contains 438 pages and many new illustrations. The book is published by the American Bee Journal, Hamilton, Ill.

FOR SALE.—Safety Comb honey cartons for sections, size 4¼x4¼x1⅞; 4¼x4¼x1½; 4x5x1⅜; 4x5x1½; 3⅝x5x1½; 4¼x4¼x1⅜; 4¼x4¾x1½; 4¼x4¼x1¾; 4¼x4¾x1⅜; for 50 cents per hundred, so long as present stock last. Sections equipped with these safety cartons will fit in the regular 24-pound shipping cases and insure safe shipment of honey. They are appropriately printed on all four sides. Send for sample. THE A. I. ROOT COMPANY, Medina, Ohio.



Oat Sprouter $2.49

You can make a better sprouter than you can buy. This sprouter was made in one evening by a 14 year old boy with a saw and hammer. The cost, with heater, was $2.49. Thousands in use. All say it is the best and handiest made.

Make Layers Out of Loafers

To make hens lay their best, in winter, *growing* green food, rich in vitamins, must be fed. Sprouted oats are best. The Putnam Home Made Sprouter yields the best and sweetest sprouts and with the least work. I will send, free, plans for making this sprouter with description of Little Putnam Stove to heat it. Also instructions for use of stove to keep fowls' drinking water unfrozen. Stove holds three pints of oil. *Burns a month without trimming or filling.* Patented burner. Nothing like it. Ask your dealer, or send me his name and $2.00 and get one by return mail, postpaid. Try it. If not satisfied, return in 10 days and I'll refund $2.00 and postage. I run all risks.

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Little
Putnam
Stove

$2.00 Post Paid

Burns a Month Without Attention

RAISE GUINEA PIGS for us. We buy all you raise. Big profits—large demand—easily raised. Pay better than poultry or rabbits. Particulars and booklet how to raise **FREE.**
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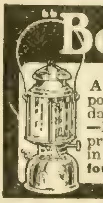

A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable —Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. **Agents wanted. Big Profits. Write for Catalog.** THE BEST LIGHT CO.
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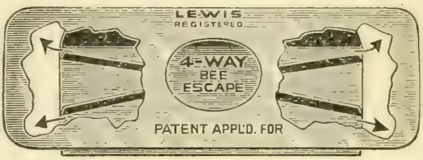

Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal. Price each 18c prepaid. Made by

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For Sale by All Dealers.

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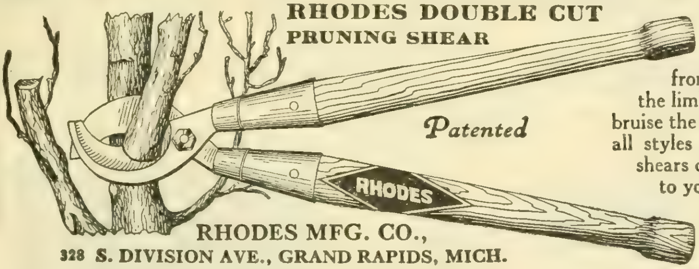

THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door. Write for circular and prices.

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QUEENS *Package Bees Nuclei* **QUEENS**

For years we have been shipping thousands of pounds of bees all over U.S.A. and Canada. Now is the time to place your order for spring. Send for our free 1923 circular. We can save you money by ordering early.

The Very Best of Queens and Bees.
ITALIANS — CARNIOLANS — GOLDENS.

Nueces County Apiaries
Calallen, Texas

1923 1923

Nuclei & Bee Supplies

ROOT QUALITY

We carry a complete line of A. I. Root Co. supplies. Send for catalog. We are now booking orders for our nuclei for the spring of 1923. Note what the following prominent beekeepers say about our nuclei and business methods.

> "In reference to your nuclei let me say I will have no hesitation in recommending you as to ability to put up bees for shipment or as to your business integrity.—R. F. Holtermann, Brantford, Canada.

> "Installed the 25 nuclei today. They arrived in perfect condition. I am more than pleased with them, and will recommend you to anyone.—J. B. Alderson, 3432 N. Oak Park Ave., Chicago, Ill.

> "Twenty-five nuclei arrived in excellent condition. This is something like buying bees.—Arthur F. Hodgson, Jarvis, Ont., Canada."

3-fr. Nuclei Italian Bees and Queen $5.00 ea.
3-fr. Nuclei Black Bees and Italian Queen .... 4.50 ea.

One extra pound of bees with each nucleus, and safe arrival, free from disease guaranteed. One-third down with order to guarantee acceptance.

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Requeen With

FOREHAND'S 3-BANDS

They Satisfy; Why?

Because they are guaranteed to be as good as money can buy. Not a cheap queen but a queen of the best at a cheap price. Every queen guaranteed to reach destination in first-class condition, to be purely mated and give perfect satisfaction or money back. Orders filled by return mail.

Untested, 1 to 25, 90c each; 25 to 50, 80c each; 50 to 100, 75c each. Select Untested, $1 each. Tested, $1.75 each.

Better Queens for Less Money

N. FOREHAND, RAMER, ALA.

Big Reduction

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Bee Supplies

Shipping cases.........$30.00 per 100
Slotted section-holders...$3.00 per 100
Sections, 1⅞, No. 1...$10.00 per 1000
Job lots of frames, regular size...............$3.00 per 100
Standard Hoffman frames, 9⅛ deep ....$4.50 per 100
Unspaced wedged top-bar frames, 9⅛ deep...........$2.75 per 100

Send for Catalog and Price List.

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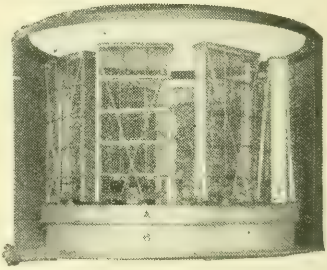

Lewis-Markle Power Honey Extractor. Tank cut away.
A—Pan over machinery. B—Bottom of tank.

Made in 4 and 8 frame sizes. Accommodates 2 sizes of baskets, power operation, machinery underneath, no vibration, tank and basket instantly removable for cleaning. A commercial success. Circular free. Address:

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Watertown, Wisconsin, U. S. A.

There's a Distributor Near You.

BEE CANDY Just what you want to use when you pack your bees this fall. This candy will save many colonies that are short of stores. Put up in large paper plates just right for your hive. Send for circular and price, also catalog of supplies.

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QUEENS

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Untested—1, $1.00; 5, $4.50; 10 to 50, 80c each; larger lots, 75c each. Tested—1, $2.00; 10, $17.00.

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O. F. Darnell, Prop. M. S. Fortune, Queen-Breeder.

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Authorized Distributor for St. Louis district.
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Italian Queen Bees

From my best SELECT BREEDERS; gentle, roll honey in, hardy, winter well, not inclined to swarm, three banded, 28 years' breeding experience. Satisfaction guaranteed. Safe arrival in U. S. and Canada.

1 Untested, $1.25; 6, $7.00; 12, $12.00.
1 Sel. Unt., $1.50; 6, $8.00; 12, $14.00.

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QUESTION—

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Are We Saving You Money?

THE A. I. ROOT COMPANY OF IOWA
COUNCIL BLUFFS, IOWA

Your Last Chance

We can send you quick a choice untested Italian Queen at our reduced price, to fill your last need of the season for a queen. Order now and save your colony or replace those old queens before it is too late.

Queens, Nuclei and Packages for 1923

1 Untested, 75c; 10 or more, 60c each.

THE STOVER APIARIES
MAYHEW, MISSISSIPPI

NEW PRICES

On Friction Top Cans and Pails

	25	50	100	200	500	1000
2½-lb. cans	$1.15	$2.15	$4.10	$7.75	$18.75	$36.00
5 -lb. pails	1.90	3.50	6.50	12.00	28.25	55.50
10 -lb. pails	2.75	5.00	9.50	18.00	43.00	83.00

All packed in fibre containers. They keep neat and clean till you use them
Prices F. O. B. cars Lansing and not from some distant shipping point

Send in Your Order

1-Pound Round Jars

White glass and lacquered screw caps packed in re-shipping cases of 24 each. Priced as follows:

Each	$1.30
10 Cases	12.00
50 Cases	57.50

F. O. B. cars, Lansing, Mich.

2-Pound Round Jars

White glass and lacquered screw caps. Packed in re-shipping cases of one doz. each. Priced as follows:

Per Case	$ 1.20
10 Cases	11.50
25 Cases	27.50

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White glass and lacquered slip-on caps. Packed in re-shipping cases of 48 each. Priced as follows:

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A Grade Tin Paste

Just what you want for attaching labels to tin and glass containers. It sticks. Prices as follows:

One Pint	25c
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Postage extra.
Remember, IT STICKS.

Send in Your Order

M. H. HUNT & SON
510 North Cedar Street
LANSING, MICHIGAN

Some Wintering Suggestions

It is time to be preparing the bees for winter. Every beekeeper knows that a young queen, plenty of young vigorous bees, plenty of good stores, and a location where the cold winter winds cannot sweep unbroken over the hives, are indispensable necessities for good wintering. There is another requirement for good wintering that a good many beekeepers unfortunately neglect—protection of the hive itself. Good beekeepers don't neglect this very important matter—they either use permanently packed double-walled hives, or they pack their hives from the outside in some sort of winter case.

THE BUCKEYE DOUBLE-WALLED HIVE.

The Buckeye Double-Walled Hive.

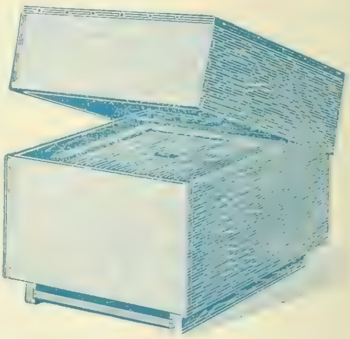
Here is a hive, beautifully made, long tried, and proven fit for all the cold and storm of winter. Its first cost, to be sure, is greater than that of the single-walled hive, but it pays for itself within two or three seasons ordinarily, because: Bees winter in this hive with the very least loss; the hard labor of cellar-wintering or special packing is done away with; there is a saving of winter stores; strong colonies are assured for the beginning of the honey flow. Notwithstanding all these admitted advantages in favor of the permanently packed Buckeye Hive, we have known of beekeepers buying single-walled hives and providing winter-packing cases for them (necessitating all the labor of putting up and packing in the fall and taking down in the spring), at a larger expense than a Buckeye Hive for every colony would have cost them originally.

And right now it would pay many a beekeeper to make his bees safe and secure for next winter and all winters by transferring from old hives to the Buckeye. The beekeeper who does this has the safest, slickest, nicest-looking, easiest-to-handle apiary in the world. The small beekeeper especially should do this. The backlotter certainly should do it.

But—we do not advise any beekeeper with good single-walled hives to discard them. Pack them in some way for winter. Slater's felt tied about a single-walled hive, as advised and illustrated in Gleanings in Bee Culture for October, 1921, is the best cheap packing, we think. Any right-sized box, with exit from the hive entrance properly arranged, may be made to serve as a winter case. The rather expensive quadruple winter case is excellent and will pay, if the beekeeper has the money to buy it. We shall be glad to quote prices on quadruple winter cases, in small or large quantities—but they are not cheap. We will quote the very lowest figure possible, however, material and quantity considered.

BARGAIN PRICES FOR A WINTER CASE.

We have some winter cases for single-walled hives, both 8-frame and 10-frame, that virtually convert a standard single-walled hive into a Buckeye. The case, the same size as the outside wall of the Buckeye, fits over any standard 8 or 10 frame hive, leaving space for packing with shavings, chaff or leaves; and the regular Buckeye telescoping metal cover completes the outfit, which is very satisfactory. We have in stock 158 of the 8-frame, and 120 of the 10-frame of these dovetailed winter cases. While they last, we will sell the 8-frame in packages of 5, knocked down, for $9.50; the 10-frame in packages of 5, knocked down, for $10.00. First come, first served. They won't last long.


Dovetailed Winter Case with Metal Cover.

10,000 HAVE BEEN ASKED FOR.

The beekeepers of this country have already asked us for 10,000 copies of our little booklet, "How to Sell Honey." Perhaps you want one. If so, it's free and a postal card to us will bring it to you.

THE A. I. ROOT COMPANY
WEST SIDE STATION **MEDINA, OHIO**

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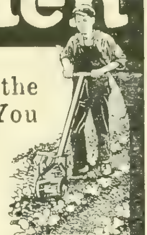
Massachusetts
NOV 6 - 1922
Agricultural
College

Gleanings
in
Bee Culture

"And now, when comes the calm mild day,
as still such days will come,
To call the squirrel and the bee
from out their winter home;
When the sound of dropping nuts is heard,
though all the trees are still,
And twinkle in the smoky light
the waters of the rill,
The south wind searches for the flowers
whose fragrance late he bore,
And sighs to find them in the wood
and by the stream no more."
—William Cullen Bryant.

VOLUME L NOVEMBER, 1922 NUMBER 11

Better Way to Garden



Don't do garden work the slow back-breaking way. You can grow a far better garden, easier and with much less time and work.

BARKER

WEEDER, MULCHER AND CULTIVATOR

THREE MACHINES IN ONE

Simply push the BARKER along the rows (like a lawn mower). Eight blades revolving against a stationary underground knife destroy the weeds and in same operation break up the surface crust into a **level, porous, moisture-retaining mulch.** Aerates soil. Intensive cultivation. "**Best Weed Killer Ever Used.**" Has leaf guards, also shovels for deeper cultivation. A boy can run it—do more and better work than 10 men with hoes.

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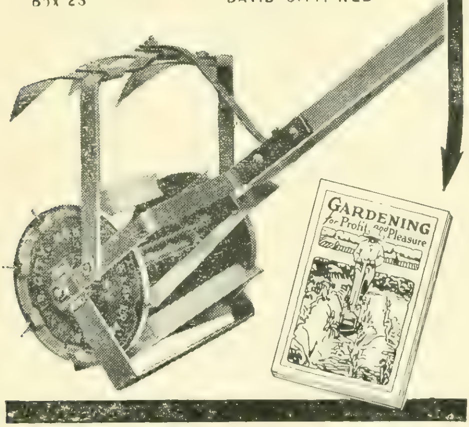
for FREE Booklet.

Let us tell you about this machine and how to raise bigger, better gardens—make gardening a pleasure. A valuable book, illustrated. Gives prices, etc. A card brings it. Write us today. Use coupon below.

BARKER MFG. CO.
Box 23 DAVID CITY, NEB


GARDENING
for Profit and Pleasure

Barker Mfg. Co., Box 23, David City, Neb.

Gentlemen: Send me postpaid your free booklet and Factory-to-User offer.

Name ....

Town ....

State .... RFD or Box ....

Dear Mr. Beekeeper:

You are probably thinking of getting your next season's supplies so that you can get them made up while you are sitting by the fire this winter. With additional help and an extra large stock of Root Quality supplies on hand, we are prepared, as never before, to give the beekeepers of this territory the best possible service. Send us list of your next season's wants and let us quote you prices.

A. I. Root Company
of Syracuse, N. Y.
1631 West Genesee St.

QUALITY
TIN CANS
FIRST
For PACKERS and
MANUFACTURERS
of
FOOD PRODUCTS
LARGE CAPACITY
LONG EXPERIENCE
YOUR INQUIRIES SOLICITED
W. W. BOYER & CO. INC.
BALTIMORE, MD.

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Entered as second class mail matter at the Postoffice at Medina, Ohio. Published monthly.
Space occupied by reading matter in this issue, 74.3 per cent; advertising, 25.7 per cent.

THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

Editorial Staff

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Money Saved
Time Saved

Bee Supplies

Root's Goods at factory prices with WEBER'S service. Send us a list of your wants and we will quote you prices that will save you money.

C. H. W. Weber & Co.
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MR. BEEKEEPER----

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship We ship anywhere. We allow early order discounts and make prompt shipments *We pay the highest cash and trade prices for beeswax.*

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Texas Beekeepers should write to A. M. Hunt, Goldthwaite, Texas.

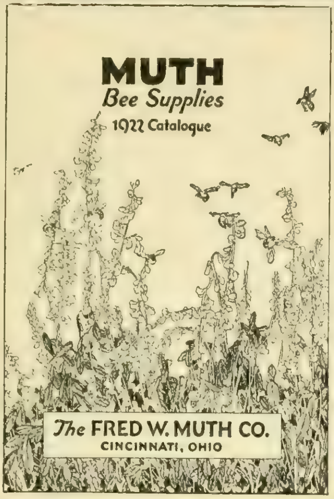
HONEY CANS AND CASES

Several carloads, all sizes, just received at our Ogden, Utah and Idaho Falls, Idaho, warehouses. Quick service; lowest prices. Also comb honey cases, all kinds.

SUPERIOR HONEY CO., OGDEN, UTAH

(Manufacturers Weed Process "SUPERIOR FOUNDATION" and Dovetailed Beehives.)

A MESSAGE FOR YOU



MUTH
Bee Supplies
1922 Catalogue

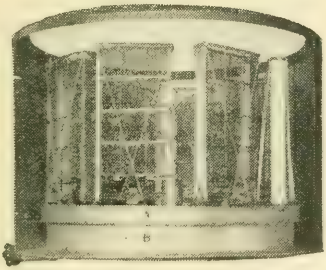
The FRED W. MUTH CO.
CINCINNATI, OHIO

You need our new 1922 bee supply catalog more than ever before. Have you received one? Many new articles are listed for the saving of labor and greater honey production. Our attractive prices, superior quality and prompt service will always be appreciated by beekeepers.

Send a list of your requirements to us.

THE FRED W. MUTH COMPANY,
Pearl and Walnut Streets,
Cincinnati, Ohio.

Lewis Extractors



Lewis-Markle Power Honey Extractor. Tank cut away.
A—Pan over machinery. B—Bottom of tank.

Made in 4 and 8 frame sizes. Accommodates 2 sizes of baskets, power operation, machinery underneath, no vibration, tank and basket instantly removable for cleaning. A commercial success. Circular free. Address:

G. B. LEWIS COMPANY

Watertown, Wisconsin, U. S. A.

There's a Distributor Near You.

Big Reduction

--ON--

Bee Supplies

Shipping cases	$30.00 per 100
Slotted section-holders	$3.00 per 100
Sections, 1⅞, No. 1	$10.00 per 1000
Job lots of frames, regular size	$3.00 per 100
Standard Hoffman frames, 9⅛ deep	$4.50 per 100
Unspaced wedged top-bar frames, 9⅛ deep	$2.75 per 100

Send for Catalog and Price List.

CHARLES MONDENG

146 Newton Avenue N. and
159 Cedar Lake Rd.
MINNEAPOLIS, MINN.

HONEY MARKETS

U. S. GOVERNMENT MARKET REPORTS.

Information from Producing Areas (First Half of October.)

CALIFORNIA POINTS.—Colonies generally in good condition for winter. Nectar yield from alfalfa reported unusually light. Demand and movement of honey barely moderate, with relatively few inquiries for carlots. Market firm, and many beekeepers and shippers reported holding for higher prices, expecting a general advance due to the tariff. Carlots for outside shipment range per lb. as follows: White orange 10-10½c, one car reported sold locally at 9c; white sage, 8¼-8¾c, 1 car 9¼c; light amber sage 6½-7c, light amber alfalfa 6¼-6½c. Beeswax, cash to growers, 20c per lb. White Hawaiian honey offered at 7c per lb. f. o. b. San Francisco. Few sales No 1 star thistle honey reported from northern California at 8c per lb.

INTERMOUNTAIN REGION.—Colonies generally said to be in good condition for winter. With advent of cooler weather, demand for honey, both comb and extracted, has increased. Numerous carlot shipments of comb reported and several of extracted. Comb crop in Colorado said to be much heavier than that of last year. It is reported that the carlot comb price declined 20-25% during late September and early October, and carlot sales reported at $3.00-3.15 per 24-section case. Other carlot sales in Colorado and Montana reported at $3.75-3.85 per case. Extracted honey seems to be firm. Carlot sales of white sweet clover and alfalfa reported from Colorado and eastern Washington at 8-8⅓c per lb, with l. c. l. sales at 8½-10c. Some beekeepers said to be selling to near-by dealers at 7-7½c for white extracted in 5-gal. cans, and low as $2.75 per case for carlots of white comb. Average yellow beeswax selling at 23-25c per lb. In Arizona honey sales from the small mesquite crop reported at 7½-8⅓c per lb. Crop from cotton now filling up hives for winter. Beekeepers generally inclined to hold alfalfa and cotton honey, but several carlot sales reported at 5¾-6c per lb.

TEXAS POINTS.—In localities where local rains fell in September, hives are in fair condition so far as young bees and winter stores are concerned. In other localities stores and bees are light in numbers. Long drouth said to have been instrumental in producing the large number of failing queens reported. Demand for honey improving. Some sales reported of light amber in 2/60s at 7½c per lb., and chunk comb, 6/10s at 13½c per lb.

EAST AND NORTH CENTRAL STATES.—Fall flow from goldenrod and aster has been good in some sections; in others it has been curtailed by lack of rain. Beekeepers fear that extremely dry fall will be damaging to next year's clover crop. Many colonies short of stores and beekeepers are feeding sugar syrup for winter. Some colonies said to be still rearing brood. Improvement noted in demand and movement of honey, although still only moderate. Carlot sale of extracted white clover reported at 10½c per lb., with less-than-carlot sales at 11-12c. Amber honey selling down to 8c per lb. Most beekeepers reported selling No. 1 white comb at 20c per section.

PLAINS AREA.—Colonies strong but many are reported light in stores owing to shortage of fall honey and heavy brood-rearing. Ground dry and prospects therefore not good for 1923 crop. Increase noted in several sections in Hubam clover acreage. Hubam said to be still yielding nectar heavily. One large beekeeper reports an average yield for colonies near Hubam fields of 260 lbs., two and a half times that of other colonies. Numerous individual yields of 275 lbs. reported Carlot sales extracted white clover reported at 9c and 10½c per lb., with small-lot sales at 12-12½c per lb. Comb honey seems to be selling slowly around 20c per section, with sales by small farmers reported low as $3.00 per case.

NORTHEASTERN STATES. — Honey plants hurt by September drouth, and fall flow has been very light Recent rains will help clover for next season. Considerable feeding will be necessary to keep bees over winter. Demand improving, but few large lot sales reported. One carlot sale reported of buckwheat in 160-lb. kegs at 8c per lb. Retail sales of honey show a considerable growth in some sections, but roadside selling considered not so good as last year. Small orders for white clover have practically exhausted supplies of some beekeepers already.

WEST INDIES: Porto Rico.—Sales to United States very light as shippers are holding for 65-70c per gal., which closely approaches the New York wholesale price of 70-75c per gal. Cuba.—Prices show slight advance. One large shipment to Holland reported at 62c per gal., cost and freight included. 4½c per lb. is the quoted f. o. b. extracted price, while beekeepers are being paid 3½c per lb.

Telegraphic Reports from Important Markets.

BOSTON.—Freight receipts equivalent to 1½ cars Porto Rico via New York and 70 cases comb by express from New York state arrived. Moderate demand for both comb and extracted, with prices unchanged. Comb: Sales to retailers: New York, 24-section cases white clover $6.00-6.50. Vermont, 20-section cases best heavy white clover $5.50-6.00, light $4.50-5.00; 24-section cases white clover best carton stock $6.50-7.00. Extracted: Receivers sales to confectioners and bottlers in 10-package lots or more, per lb., Porto Rico, amber 8½-9c. California, white sage 14-16c, light amber sage 12-14c.

CHICAGO.—Since last report 1 car Idaho, 1 car Colorado, 6,000 lbs. Iowa, 12,000 lbs. Wisconsin. 4,000 lbs. Wyoming and 2,000 lbs. Illinois arrived. Demand and movement moderate, market generally steady with a slightly firmer undertone in some quarters. Extracted: Sales to bottlers, confectioners and wholesale bakers, per lb., Colorado and Idaho, sweet clover and mixed sweet clover and alfalfa white 10-10½c, few sales 11c, light amber 8½-9c, few sales rather poor stock 7½c; Illinois, white sweet clover 10½-11c; Wisconsin and Iowa, mixed clovers white 11-12c. Comb: Sales to retailers, 24-section cases Idaho. Colorado and Wyoming, white sweet clover and mixed sweet clover and alfalfa No. 1, heavy $4.00-4.25; No. 2, $3.00-3.75. Wisconsin. white clover and extra fancy No. 1, mostly $4.75-5.00; most sales No. 1, $4.00-4.50. Beeswax: Receipts moderate. Demand and movement moderate, market firm. Sales to laundry supply houses and wholesale drug houses, domestic, light 31-33c, dark around 28c. Cuba and Central America, light 29-30c. dark 20-26c.

KANSAS CITY.—No carlot arrivals since last report. Supplies moderate. Demand and movement moderate, market steady. Sales to jobbers: Extracted: Montana, white alfalfa, 12c per lb. Comb: 24-section cases Montana and Nevada, white alfalfa No. 1 heavy new stock, $4.25-4.75. Missouri, 24-section cases heavy white clover No. 1, new crop $5.00-5.50.

NEW YORK.—Domestic and foreign receipts and supplies limited. Demand limited, market steady. Extracted: Spot sales to jobbers, wholesalers. confectioners, bakers and bottlers, domestic per lb., California, light amber alfalfa, none on market; white sage 10-11c, white orange 11½-12½c, few high as 13c. Intermountain section, white sweet clover 10-11c. few sales 12c. New York, white clover 9½-10½c, few sales high as 11½c. South America and West Indies. refined 70-75c per gal. Beeswax: Foreign receipts and supplies moderate. Demand moderate, market steady. Spot sales to wholesalers, manufacturers and drug trade: South American and Chili, light 26-28c, few 29c, darker 24-26c; Brazil, light 25-28c, few 30c, darker low as 21c. West Indies, light, best 26-28c darker low as 20c. Africa, dark 18-21c.

PHILADELPHIA.—Extracted: Supplies generally light but demand has been only fair. Market firm due principally to tariff duties on foreign stock. Sales to jobbers, Florida, various flavors light amber 83c, amber 79c per gal. Beeswax: Supplies of imported stock rather liberal, and with only a fair demand market has been barely steady with no change in prices. Sales to manufacturers, per lb. Africa, dark 21-22c. Brazil, light 26-27c, Chili, 27-28c.

ST. LOUIS.—During past month 1 car Colorado arrived. Demand improving, market steady. No sales to jobbers reported. Sales direct to retailers. Comb: in 24-section cases, Colorado, white clover $5.00-5.50. Extracted: Per lb., Missouri, light amber 8-10c. Beeswax: No receipts reported since last report. No change in market. Practically no demand or movement, market dull. Ungraded average country run, 25c per lb.

H. C. TAYLOR,
Chief of Bureau of Markets.

From Producers' Association.

The marketing of comb honey in carlots has been as satisfactory as could be desired. The extracted honey situation is not as satisfactory. Evidently the mild weather, which has prevailed longer than usual, and the large amount of fresh fruit available this season account to some extent for the lack of interest displayed by carlot buyers of extracted honey. As the new tariff of three cents per pound is now in effect, the beekeepers should be able to derive some benefit from it. We are looking for an active demand for strictly first-class white bottling honey, as the supply of this kind of stock is not excessive.

The Colorado Honey Producers' Ass'n.
Denver, Colo. F. Rauchfuss, Secretary.

The A. I. Root Company's Quotation.

Since our last quotation we have paid the following prices in carlots f. o. b. shipping points: Water white extracted white clover, from local producers, with low freight rate, 10½c per pound; western white to water white sweet clover and alfalfa, 8c; western light amber, 6c; white sweet clover or alfalfa comb honey, fancy, $3.75 per case; No. 1, $3.50, and No. 2, $3.25. These comb-honey prices are based on the following prices f. o. b. Medina: Fancy, $4.50; No. 1, $4.25, and No. 2, $4.00. Our immediate requirements have been cared for.

The Opinions of Honey Producers Themselves as Reported to Gleanings in Bee Culture.

Early in October we sent to actual honey producers the following questions:

1. How does the total honey crop for 1922 compare with that of 1921 for your locality? Give answer in per cent.
2. What per cent of the honey produced in your locality has already left the hands of the producers?
3. How does the number of colonies that will go into winter quarters compare with that of last year? Give answer in per cent.
4. What is the condition of the colonies compared with normal as to (a) number and age of bees? (b) stores for winter? Give answer in per cent.
5. What is the condition of the honey plants for next season as compared with normal? Give answer in per cent.
6. At what prices is honey being sold in large lots (carload or entire crop) at the producer's station? (a) Extracted honey per pound? (b) Comb honey, fancy and No. 1 per case?
7. What are prices to grocers in lots of one to five cases? (a) Extracted honey in 5-lb. pails or other retail packages? (b) Comb honey, fancy or No. 1 per case?
8. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair or rapid.

The answers as returned by our honey and bee reporters are as follows:

State.	Reported by:	Yield.	Crop. Sold.	No. Colo.	Colo. Cond. Bees.	Stores.	Plants.	In large lots. Ext.	Comb.	To Grocers. Ext.	Comb.	Movement.
Ala.	J. M. Cutts			100	100	85	75					
Ark.	J. Johnson	50	50	100			75		$4.80		$5.00	Slow
B. C.	W. J. Sheppard	200	25	150			100	$.20		$1.25		
Cal.	M. C. Richter	20	60	80	80	80		.08		1.15		Fair
Cal.	G. Larinan	150	40	100				.08				Fair
Cal.	M. A. Sayler	100	50	100			100	.08	3.60	.60		Fair
Colo.	J. A. Green	75	20	110	110	95	110		3.15	.65	4.00	Slow
Colo.	B. W. Hopper	100	20	100			75	.09	4.00	.65	4.00	Slow
Conn.	A. Latham	110	80	105			125	.12	5.75			Fair
Fla.	C. C. Cook	100	25	100			100	.08		.65		Fair
Fla.	H. Hewitt	200	50	110	100	100	100	.08		.65		Fair
Fla.	W. Lamkin	200	50	100	100	100	100	.08		.75		Slow
Ga.	J. J. Wilder	120	80	115	100	100	100	.10	4.25	.80	4.50	Fair
Ill.	C. F. Bender	120	75	115	90	110	70				4.80	Good
Ill.	A. L. Kildow	150	5	115			25	.10	4.25	.75	5.00	Slow
Ind.	T. C. Johnson	125	25	100			100			.80	5.00	
Ind.	E. S. Miller	75	25	90	100	110	90			.80	4.80	Slow
Ind.	J. Smith	50	50	100			75					Slow
Iowa.	E. G. Brown	110	50	110	120	80	80	.09		.75	5.00	Fair
Iowa.	F. Coverdale	200	80	125			100		4.75	.75	5.00	Slow
Iowa.	W. S. Pangburn	600		100	100		95		5.00	.75	5.00	Fair
Kan.	J. A. Nininger	110	10	120	130	130	100			.75	5.00	
Kan.	C. D. Mize	110	20	100	110	120	100			.70	5.50	Fair
Ky.	P. C. Ward	100	90	100			60			1.00		Fair
Me.	O. B. Griffin	10	35	90			100				7.20	Slow
Md.	S. G. Crocker, Jr.	100	50	125			75		5.25	1.00		Slow
Mass.	O. M. Smith	25	5	100	125	50						
Mich.	I. D. Bartlett	100	25	100	100	65	100	.10		.75	4.80	Slow
Mich.	L. S. Griggs	90	50	100	100	60	125	.10	5.40	.75		Fair
Mo.	J. H. Fisbeck	400	1	100	100	130	85					Slow
Mo.	J. W. Romberger	100	50	110	100	100	75		4.25	.75	5.00	Fair
N. Y.	Adams & Myers	125	33	125	100	75	125			.60	6.00	Fair
N. Y.	F. W. Lesser	40	10	110	100	90	120	.10			4.80	Slow
N. C.	C. S. Bumgarner		100	100	100	100	90					Fair
Ohio.	R. D. Hiatt	50	60	120						1.00	5.50	
Ohio.	J. F. Moore	80	30	110			90			.80	4.80	Slow
Okla.	J. Heueisen	100	10	90	75	100	70			.75		
Okla.	C. F. Stiles	150	65	95			75			.80	5.00	Fair
Ore.	E. J. Ladd	150	10	100			100				3.50	Slow
Ore.	H. A. Scullen	125	50	100			100	.11		.80		Fair
Pa.	H. Beaver	80		90			70	.10		.65	4.50	Fair
Pa.	D. C. Gilham	80	5	110	100	60	80			1.05	7.20	Slow
Pa.	G. H. Rea	30	50	100	75	75	50				6.00	Slow
R. I.	A. C. Miller	75	10	100	100	110	100			1.25		Slow
Tex.	T. A. Bowden	25	50	100						.75		Fair
Tex.	H. B. Parks	25	50	100	75	66		.08				Slow
Utah.	M. A. Gill	100	30	120			80	.07	3.50	.50	4.00	Slow
Vt.	J. E. Crane	300		133	100	110	120		5.75	1.25	6.50	Slow
Va.	T. C. Asher	75	50	95	105	110	100		6.00	1.10	6.00	Fair
Wash.	G. W. York	90	75	80	85	95	80	.08	3.75	.65	4.40	Slow
Wash.	W. L. Cox	125	20	100	100	95	90			.90	5.00	Fair
Wis.	E. Hassinger, Jr.	120	50	100			100	.11		.85		Fair
Wis.	H. F. Wilson	90	25	100	100	50	100	.12	4.75		6.75	Slow

For Real Success You Should Buy

Woodman's Inner Overcoat Hives

BEE CAUSE:

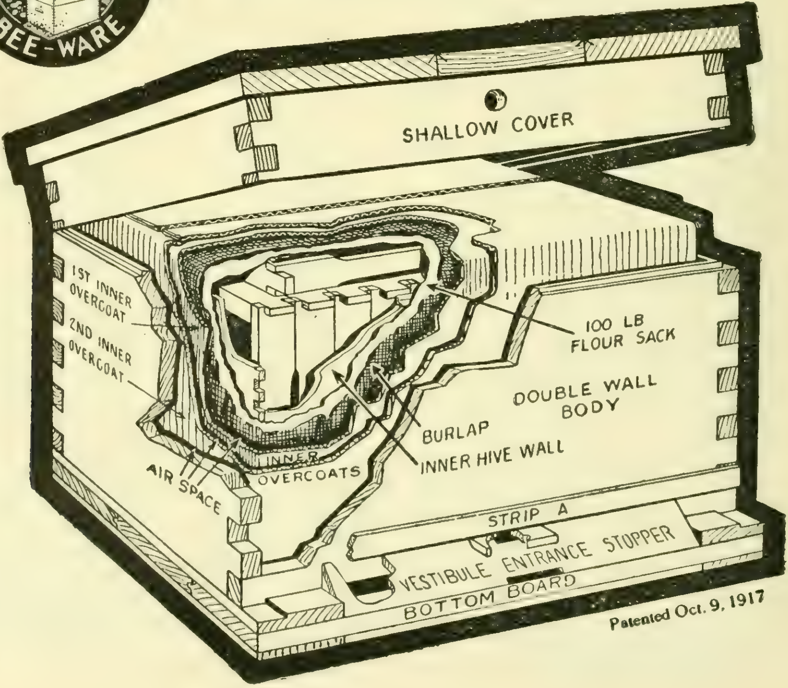
1. **Protected Bees work day and night.** It has been shown by careful observation that maintaining a temperature of 98 degrees permits comb-building to go on **both day and night.** The bees will thus devote more daylight time to gathering honey.
2. **Larger Honey Crops are assured.** The bees are enabled to rear brood earlier in the spring, with no danger of chilled brood on account of cold snaps. One bee in March is worth one hundred in July.
3. **You will practically eliminate winter losses.** With your colonies in normal condition (that is, with plenty of good stores, a young queen and young bees) you will be able to winter practically 100%.
4. **The Inner Overcoat Hive will last a lifetime,** as the outer hive walls are the same thickness as in the single-wall hive. In other words, WOODMAN Inner Overcoat Hives are a lifetime investment—not an expense.
5. **Out of-door Wintered Bees have many advantages over cellar-wintered bees.** They do not spring-dwindle and are stronger at the opening of honey flow.
6. **Insures Close-up protection.** A person may have any amount of blankets fastened up to the wall of his room and still freeze to death if left in the center of the room without **close-up protection or insulation. The close-up protection in the Inner Overcoat Hive is what does the trick.**

5 one-story regular depth hives, $25.00: Jumbo depth, $27.50

WOODMANS FAMOUS BEE-WARE

Special circular on WOODMAN'S Protection Inner Overcoat Hive, showing 10 large illustrations, sent on request.

A. G. WOODMAN COMPANY, *Sole Makers*
238 Scribner Ave., N. W., Grand Rapids, Mich.


SHALLOW COVER
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Patented Oct. 9, 1917

A SUPERIOR QUALITY AT LESS COST.

Supplies

A SUPERIOR QUALITY AT LESS COST.

(MADE BY THE DIAMOND MATCH COMPANY)

WE ARE MAKING SPECIAL REDUCTIONS IN PRICES WHICH ARE GOOD FOR NOVEMBER AND DECEMBER SHIPMENT ONLY. WE ARE SURE BEEKEEPERS WILL PROFIT BY TAKING ADVANTAGE OF THIS REDUCTION.

One-Story Complete Dovetailed Hive

With metal telescope cover, inner cover, reversible bottom, Hoffman frames, nails, rabbets.

Standard Size.

Crate of five, K. D., 8-frame	$11.40
Crate of five, K. D., 10-frame	11.95

Jumbo Size.

Crate of five, K. D., 10-frame	12.85

Hive-Bodies

With Hoffman frames, nails, rabbets.

Standard size, crate of 5, K. D., 8-fr.	$4.70
Standard size, crate of 5, K. D., 10-fr.	5.30
Jumbo size, crate of 5, K. D., 10-fr.	6.20

Hoffman Frames

Standard size	100,	$4.70;	500,	$22.00
Shallow	100,	3.90;	500,	19.00
Jumbo	100,	5.20;	500,	25.00

Diamond Brand Foundation

SPECIAL PRICES! SPECIAL PRICES!

Medium	5 lbs., 65c lb.;	50 lbs., 60c lb.
Thin Super	5 lbs., 70c lb.;	50 lbs., 65c lb.

Comb Honey Supers

For 4x5x1⅜ sections including section-holders, fence-separators, springs, tins and nails.

Crate of five, K. D., 8-frame	$5.00
Crate of five, K. D., 10-frame	5.40

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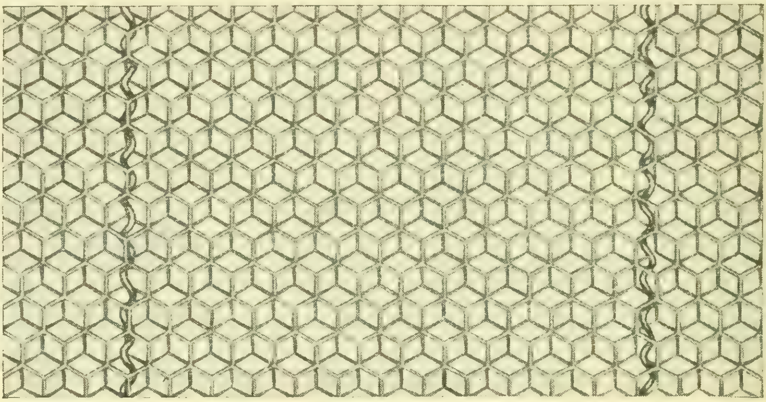
Reinforced with Radiating Shoulders of Strength



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Makes Non-Sag All-Worker Comb

Wired Foundation

A YEAR OF USE completely upholds the claims which were made for Dadant's Wired Foundation, and beekeepers everywhere are enthusiastic in the great improvement which shows in their combs.

EVERY USER AN ADVERTISER.—Ask your neighbor who has tried Dadant's Wired Foundation how he likes it and we will need to say no more to you. His advertisement will be sufficient.

DADANT'S WIRED FOUNDATION may be used in new-style split bottom-bar frames or in the old-style one-piece bottom-bar frames with equal satisfaction. It is also adaptable to any size and style of brood or extracting frame.

COSTS NO MORE.—Since Dadant's Wired Foundation reduces the cost and labor of wiring, its extra price of three cents per pound above the catalog prices of old-style foundation is thus more than returned to the beekeeper.

ASK FOR SAMPLES.—A small mailing sample sent free on request. **Special Offer:** A sample of seven sheets, for either split bottom-bar or old-style one-piece bottom-bar frames will be sent, postpaid, to any address in the United States for $1. Specify size desired. Only one sample to a person.

---o---

BEESWAX.—We need large quantities of beeswax and are paying good prices now. Ship to us at Hamilton, Ill., or Keokuk, Ia., or drop us a card and we will quote f. o. b. here or f. o. b. your own station, as you desire.

---o---

Wired Foundation is sold by all distributors of Lewis ''Beeware'' and Dadant's Foundation. Send them your orders.

Dadant & Sons, Hamilton, Illinois

GLEANINGS IN BEE CULTURE
NOVEMBER, 1922

Donation of Books for the Miller Memorial Library.

PROF. H. F. WILSON, University of Wisconsin, Madison, Wis., reports that books are already being received for the Miller Memorial Library at the University of Wisconsin. Among the first books to be received is a shipment from Arthur C. Miller, Providence, R. I. Mr. Miller has donated his entire personal library of bee books consisting of several hundred volumes, many of which are rare, being out of print and only a few copies known to be in existence. In turning over these books to the Miller Memorial Library Mr. Miller is giving up the work of a lifetime of collection. This is indeed a splendid gift and an act which brings out the best in any person. No doubt many other beekeepers who have made a collection of bee books will follow the example of Arthur C. Miller. Others will no doubt make provisions in their wills for the turning over of their bee books to the Miller Memorial Library as suggested recently by Dr. E. F. Phillips. There is no better way for beekeepers to establish themselves in beekeeping history than to make similar donations to this Library. Prof. Wilson reports that the Library material is being cataloged and placed in separate files under lock and key as fast as it comes in. The Library will be available at all times to beekeeping students, but care will be taken to see that the books are not mistreated in any way or lost. Plans are being made to make this the greatest collection of beekeeping literature in the world.

* * *

Local Beekeepers' Organizations.

NOW that the season for the winter meetings of beekeepers' associations is at hand, attention should be called to the value of local organizations, such as county organizations and organizations covering two or three counties. Many things can be accomplished in a local organization that cannot well be done in a state organization. In certain counties in California, for instance, beekeepers have organized local associations largely for the purpose of better disease control. In these organizations the members make a survey of their own neighborhood for disease, and report conditions to the organization. In this way the local organization can co-operate with the inspector in running down disease. The control of bee diseases, the division of territory, marketing, and many other beekeeping problems can be better taken care of by an alert local association than when these things are done in a haphazard way.

* * *

Recent Legislation Affecting Beekeeping.

BEEKEEPERS of the United States were especially favored by Uncle Sam's lawmakers this year. Out of the thousands of bills introduced in the recent Congress, only about 1100 were passed, this being only a small percentage. Of these, two bills were passed to promote the beekeeping industry of the United States. The law relating to the importation of bees into the United States (the Isle of Wight disease bill) was approved on August 31. This law prohibits the importation of bees and queens except from countries known to be free from the Isle of Wight disease. The Fordney-McCumber Tariff Bill, approved on September 21, provides for a duty of three cents per pound on honey imported into the United States, instead of the import duty of 10 cents per gallon which had been in effect since the enactment of the 1913 Tariff Bill.

* * *

Weather Forecast Service for Beekeepers in New York State.

IN his report for the North, East, West and South Department in this issue, Prof. R. B. Willson, Extension Specialist in Beekeeping in New York, announces the inauguration of a new service for beekeepers in that state. The weather predictions at the time for putting bees into the cellar will be watched with great care, and reports will be sent out by telegram to key men who will notify local beekeepers as to the best time for putting bees into the cellar. With the proper kind of co-operation on the part of the key men and beekeepers, this service should be of great value to those who winter their bees in the cellar in New York State. This service is similar to that which has been in operation in the fruit districts of New York

State for some time, by which fruit-growers are notified in advance of any unusual weather conditions such as frosts during the blooming period.

No doubt this service will be extended, and beekeepers will be notified in the spring when bees should be taken from the cellar. The Weather Bureau, being able to forecast the arrival of a good flight day for the bees, is in a position to tell the beekeepers in advance when to put the bees out in order that they may have a good flight within a day or so after being set out.

Honey production is more dependent upon weather conditions even than is agriculture. Beekeepers, as a rule, are close observers of weather conditions, for their living is largely dependent upon the weather. Those who have access to the daily weather maps, published by the Weather Bureau, should make a careful study of these maps. It is not difficult to learn to read these maps properly, and it is often of great value to beekeepers to know in advance what kind of weather may be expected within the next few days. The weather forecast given in the daily papers is not complete enough for the needs of the beekeeper. By a careful study of the weather map it is possible to learn what the weather will probably be for several days in advance.

Putting Bees Into the Cellar.

SOME time this month bees that are to be wintered indoors will be put into their winter quarters. In some regions the proper time to put the bees in may come early in the month, while in other regions the best time for putting them away will no doubt be after the middle of the month. In no case should they be left out until December. It is easy enough to lay down a rule as to the exact time for putting the bees into the cellar but not at all easy to apply this rule. The rule that has been given again and again in the bee journals is to put the bees away immediately after their last good cleansing flight in November. If it were possible to forecast the weather for the entire month of November there would be no trouble in applying this rule. As it is, the best thing the beekeeper can do is to have everything in readiness to put the bees away early in the month, then wait until the bees have had a good cleansing flight.

In this connection it should be remembered that the bees usually do not fly freely on mild days immediately after they have settled down and become quiet for winter. Apparently it is necessary for them to be confined within their hive by bad weather for a week or two in order that they shall feel the need for a cleansing flight. Otherwise only a few bees will fly during mild days of early November. However, after they have been confined to their hives for a week or two they become anxious for a flight, and if the right kind of day comes perhaps every bee of the colony goes forth in the sunshine at some time during the day.

The ideal condition, therefore, for putting bees away in the best possible condition is to have a couple of weeks of bad weather during the latter part of October and early in November followed by at least one day that is warm enough for a thorough cleansing flight. Fortunately, such a day nearly alway comes some time in November, usually before the 20th. When it does come and the bees have had a good cleansing flight the temptation is to leave them out a week or two longer, hoping they will have another cleansing flight before confining them in the cellar, but apparently there is no advantage in leaving the bees out another week, even if a good flight day should come later. In fact, if the bees have enjoyed a thorough cleansing flight and are put into the cellar at the right time they should be better off in the cellar where they will remain quiet than if left outside to waste their energy in an additional cleansing flight, provided of course they are supplied with the best of stores so that they will not need another cleansing flight until they are set out in March or early April. Another mistake that is often made in putting bees into the cellar is that of putting them away early in November after they had had only a partial cleansing flight. As already pointed out above, apparently the bees must first endure some confinement by bad weather in order to put them in condition to desire a cleansing flight.

Usually the next day after the bees have had a thorough cleansing flight in November the weather turns cold, and this is the ideal time for putting the bees away. They should be carried into the cellar at once before the hives become covered with snow. A temperature of 35 to 40 degrees is ideal for carrying the bees into the cellar, and a cloudy day is better than a clear day for this work.

What the Law Requires on Labels.

MANY beekeepers who sell their honey locally have printed on their labels "From the apiary of" or "Produced by." A number of inquiries have come to this office recently asking if these same labels can be used when the beekeeper purchases honey from some one else to supply his market after his own crop has been sold. To state on the label that the honey is from the apiary of John Jones, if John Jones buys the honey from some one else would be misleading and in the eyes of the law no doubt would be construed as misbranding. Likewise to state that the honey was produced by John Jones when it was produced by some one else would be misleading and therefore contrary to law in most states and for interstate shipment. All that is required by the Federal Pure Food Law and the various state pure food laws in regard to labeling is that the label shall tell the truth. Beekeepers who practice buying honey from others to sell after they have sold their own crop should not have on their labels the words "Produced by" or "From the apiary of." Where a beekeeper has built up a local market by supplying only a good grade of honey neatly put up, these words can be omitted from the label without loss of sales.

Moisture Given Off by Bees During Winter.

IN his excellent article, "Wintering in the Northwest," in the October issue of the American Bee Journal, our venerable correspondent, J. E. Crane, discussing the source of moisture within the hive during the winter, estimates that there will be about three pints of water exhaled by a normal colony of bees between November 1 and April 1, assuming that the colony consumed 17 pounds of honey in that time. In arriving at these figures evidently Mr. Crane took into consideration only the water content of the honey, which is usually about 20 per cent. In 17 pounds of honey this would be 3.4 pounds, or a little over three pints, assuming the water content of the honey to be 20 per cent.

This is not the only source of water when honey is consumed by the bees, for the remaining 80 per cent representing the sugar content of the honey is broken up or changed chemically into water vapor and carbon dioxide. Assuming the sugar content of the 17 pounds of honey mentioned above to be 13.6 pounds (this being 80 per cent of the total weight of the honey), this 13.6 pounds when decomposed by the bees results in a little over 8.6 pounds of water. This added to the 3.4 pounds of water which was not chemically combined in the honey gives a total of 12 pounds of water resulting from the consumption of 17 pounds of honey. In other words, the bees in consuming 17 pounds of honey must give off almost a gallon and a half of water.

Perhaps an easier way to remember this is to take 12 pounds of honey as a basis, this being approximately one gallon. When one gallon of honey is consumed by the bees they must give off approximately one gallon of water, which is given off in the form of water vapor. Of this one gallon of water about 2.4 pints represents the water content of the honey and the remaining 5.6 pints represents that which is produced by the decomposition of the sugar content of the honey.

Assuming that a colony of bees consumes 17 pounds of honey between November 1 and April 1, 151 days, this would mean about 1/12 pint of water as the daily average given off by a colony of bees during this period. This water vapor apparently does no harm inside the hive unless it condenses on the combs or on the walls of the hive, causing the combs to mold and in some cases causing the honey to become thin and sour. If the temperature of the inner walls of the hive can be kept above the dew-point (the temperature at which condensation takes place) the water will pass out of the hive through the entrance still in the form of water vapor. If the walls of the hive become too cold so that the air coming in contact with it is chilled below the dew-point, the water vapor is condensed and may finally run out at the entrance of the hive.

If the walls of the hive are thin and the cover is sealed down so that the moisture-laden air cannot escape at the top of the hive, most of the moisture will be condensed inside the hive. In this case frost and ice would be found on the inside of the hive during very severe weather. On the other hand, if the walls are well packed the water vapor will pass out through the entrance by diffusion unless there is some spot in the hive which is cold enough to chill the air sufficiently to cause condensation. In severe climates where the inner walls of even well-packed hives are sometimes chilled enough to cause condensation, many beekeepers provide for a slight amount of upward ventilation through the packing. In doing this a small opening is left in the cover (the bee-escape hole in the inner cover will do), this opening being covered over by a cloth, and over this is placed the packing. Such an arrangement will permit the escape of some of the moisture through the packing and yet retain most of the heat. Some remove the cover entirely and put in its place a piece of burlap, then over this the packing. In doing this there is danger of permitting the escape of too much of the heat of the cluster through the packing by air currents unless the packing is very dense and thick.

Since the amount of moisture exhaled by a colony of bees depends upon the amount of honey they consume, protection of the hive reduces condensation in two ways: (1) by raising the temperature of the inner walls, and (2) by reducing the amount of honey consumed because of reducing the necessity of heat generation by the bees. For the same reason colonies which have good stores (hence consuming less) are troubled less by condensation. Thus the factors that bring about better wintering result in less condensation, while those that bring about poor wintering increase condensation of moisture in the hives. Beekeepers have long associated wet and moldy combs with poor wintering, usually thinking of it as the cause, but it should be looked upon as the result rather than the cause of poor wintering.

TONS OF HONEY FROM HUBAM

How Farmers Were Induced to Plant 438 Acres Near This Man's Apiaries

By Edw. A. Winkler

ALONG in the year 1920 I received a free sample of Hubam clover seed from the Iowa station, and, after harvesting several pounds of it that year, I decided I would plant quite an acreage in 1921; so I bought some more seed from Henry Fields and after I was through planting I found I had 43 acres in rows 21 inches apart. I had limed the ground well, and, although I was late in planting it, I harvested a fine lot of seed.

I paid $30 an acre rent for the land I grew my Hubam on and $10 per pound for the seed I bought, and hired nearly all the work done, as I am not a farmer but a beekeeper with about 500 colonies.

When I planted my clover I thought I was going to grow it as a side line with my bees; but when cultivation time came, and then hand-weeding became necessary with the managing of many boys, I soon found that my bees were the side line, and that I was working overtime to prevent a total loss in both lines.

Broad acres of Hubam furnished an abundance of nectar during August and September.

When I had my seed all in bags and all expenses added up I found that my total investment was over $3000, not figuring my own time. I was not discouraged, for I had over 2700 gallons of honey and I believe the finest lot of Hubam seed in the state.

I sold about 1000 pounds of my seed, but not many farmers were buying seed at $2 per pound; so, long before the seed-selling season opened, I decided I was through selling Hubam seed. I had decided on a plan where I could invest my seed better than the money it would bring.

I had harvested not a pound of honey from my 43 acres, but was sure that if the atmospheric conditions were right, Hubam would yield honey and lots of it, for I had read of others harvesting Hubam honey.

Made Contracts with Farmers to Grow Hubam.

I drew up contracts and advertised once in the local paper that I would furnish the seed, one-half the limestone, test the soil (in which I used the potassium cyanide test) and furnish bees to pollinate the bloom. Under my instructions the farmer was to prepare the soil, plant the seed broadcast, 10 pounds to the acre, and hull the seed crop, the seed to be divided equally between the two of us. I also planted some in all kinds of grain. Inside of three weeks my seed was all spoken for. In this way I had 438 acres planted by farmers, from 10 acres up to 70 acres each.

Nearly all the fields planted in grain early in the spring had the Hubam just as high as the grain when the grain was cut. Those straw piles make mighty good feeding, for the stock eat it readily, while the grain yields were just as high as fields having no Hubam in. You know the chinch bug does not bother sweet clover. It's hard to find a chinch bug in a field of sweet clover, and I believe that Hubam in grain fields will, to a very great extent, eliminate this pest.

We are now cutting Hubam here that was seeded in winter wheat, oats, spring wheat and winter rye.

All of those stands in grain were planted 5 pounds per acre and will yield from five to six bushels of seed per acre, while the fields of Hubam planted alone will run from eight to ten bushels of seed per acre. One field planted in oats will average at least six bushels per acre.

The spring started in so wet that farmers couldn't plant until almost the first of May, and then after it was planted there was not any more rain.

Heavy Honey Flow Through August from Hubam.

The bees started to work on alsike about June 5, and by July 4 I had 800 gallons of fine clover honey in cans. Wild biennial sweet clover followed on the heels of alsike, and before that was through my Hubam was white with bloom. I never saw bees carry honey so fast as they did all through August which is usually a month of dearth of nectar here and which was the case this year with two of my outyards that couldn't reach the Hubam fields.

We had a frost Sept. 26, and today (the 28th), although the fields are ripe with seed and cutting is progressing rapidly, there is an underbloom down in the Hubam that the bees are working on heavily.

I am usually about to pack my bees for winter by this time; but the supers are still on the hives and bees working just like in July, and, if I shake the bees off the unsealed combs, the honey splashes out like water, so I must leave the supers on until the bees stop working even if it is Christmas.

Extracted Six Times from Hubam Apiaries.

I extracted six times at all yards where Hubam was growing, and there will still be a clean-up. Many of my hives have already produced 400 pounds each. Some of those hives have over 50 pounds on now, and it seems that they will keep on working until it gets good and cold, for the Hubam fields that were cut over two weeks ago are beginning to get whitish again and with a late fall like we had last year . . . O, shucks! why be so hoggish? Hasn't the good Lord been ever so generous this year, and anyhow, as soon as the bundles are hulled, the farmers are going to fall-plow it for corn or disc it up good and put in their winter grain.

We have organized the "Will County Hubam Seed Producers' Association." Altogether we have approximately 1000 acres. The object of this association is to sell, at a uniform price, clean, certified, scarified Hubam seed. I will not stop until Hubam is growing on nearly every farm in Will County. I don't know how much seed I will sell; but I know I will not sell all of it, for I am going to contract most of my seed out again next year in small grain, and Will County will flow with honey from May to October. When I look at the hundreds of cases of fine extracted honey piled up seven cases high in long tiers and in every available nook and corner until it is almost impossible to take stock, I feel that it is the best investment I can make.

Hail to Hubam clover, for it is more than a godsend, as our sage A. I. Root wrote. In time, when the seed is more plentiful, we shall see great fields of it plowed under; but the right time to fall-plow Hubam under is when the stocks are full of green seeds just as the white bloom is blasting, and that will be another godsend to the beekeeper.

With fields of Hubam clover all about us we get no amber fall honeys. Although there is a slight blend the honey is very light, and Hubam honey is decidedly different from that from the biennial white sweet clover which has a greenish color. Hubam honey is white to light amber and tastes very much like that from white clover or alsike.

Joliet, Ill.

HONEY MARKET CONDITIONS

Lack of Greater Development of Consumer Demand, a Serious Handicap to Beekeeping.

By M. C. Richter

UPON glancing backward a decade or more we look with no little pride upon the wonderful achievements which have been made in beekeeping practices. What are our thoughts, however, when we consider our product in relation to its marketability? Suppose we compare our natural sweet with some of the flavored sugar syrups that are placed upon the market profitably and in large quantities at about 45 cents per pound. R. B. Calkins expressed the situation clearly when he said, "The most valuable and meritorious sweet obtainable is begging a market at prices barely above the cost of production."

As producers we have better queens, better disease control measures, better and quicker methods in manipulation; we enjoy migratory beekeeping and many other new and improved practices. Are we, however, bringing about a consumers' demand for honey? Are not many of us today either acknowledging the letter sent us by honey buyers or contemplating the turning over of our crop to the same buyers whose agents call upon us in person? California offers unsurpassed honey both as to quality and quantity, with marketing centers at a great distance, and this fact has caused us and continues to cause us very grave concern. Five years ago we thought we needed, and rightly, a co-operative selling association. We formed it, and it has failed.

Co-operative Marketing Associations.

What is the position of co-operative associations today? Five years ago some of the California associations were outstanding examples of co-operative efficiency. Compare them at present with the immense tobacco, cotton and grain marketing associations in the East. California associations look small indeed when it is known that the Burley Tobacco Growers' Association alone has 57,000 members.

Very recently co-operative marketing associations have progressed to an astonishing degree. Anti-trust laws have not affected the co-operative producers. Likewise it has been shown that the consumer gains and does not lose through farmers' co-operative associations. Notwithstanding, the majority of us today unfortunately retain our individualistic tendencies.

At the present time statistics show that from the average dollar which the American consumer pays for his farm products, the farmer receives actually less than 40 cents. On the other hand the Danish co-operative farmer upon delivering his product to England gets 65 cents out of the British consumers' dollars.

Honey prices, like those of most other farm-produce prices, are changeable and uncertain. Speculators favor variable prices, whereas a group of co-operative producers prefer to keep prices as steady as possible, accomplishing this end by maintaining accurate information concerning available supply. Through the control of a sufficient amount of such a supply, they are able to market intelligently. At this writing California honey is crowding the market, resulting in depressed prices. Later we may expect artificial inflation. Thus, individually the beekeeper is depressing his market. Co-operation means releasing honey when markets ask for it, resulting in increased returns for the producers without adding to the consumers' expenditure. Moreover, co-operative associations stimulate demand for their products through standardization, advertising and by the continuous adoption of better marketing facilities.

Our exchange did not fail because the co-operative movement had slackened. On the contrary, the foregoing statements have shown that co-operation is still sound and is more popular than before. Successful co-operative enterprises not only must carry conviction and propaganda amongst their constituents but they must also show practical success in their competitive struggles with private enterprises. This is very important. The administration must be alert and energetic and show aggressive and intelligent control. If it has not these attributes, it has not learned the administrative virtues of the best privately owned corporations. Fundamentally the co-operative organizations must be as efficient as privately managed organizations, in order to succeed. Failures in co-operation are usually due to the well-known common faults of our large masses and democratic institutions. Conditions such as these never enter into the success or failure of privately owned concerns.

It is not my desire to advocate another selling organization. The time is not propitious. It is the intention here to point out that the principle underlying co-operative associations is sound, workable and practical. Eventually we are going to have co-operative selling, and please let every beekeeper bear this in mind.

Development of Local Markets.

For the next few years beekeepers will bend their efforts towards increasing the demand for their product in their home markets. Today this is the very best solution we have to offer. The lowering of honey prices this fall has been distinctly our fault. When the market is not in a receptive mood we must learn to hold honey till the demand is forthcoming. As individuals we cannot afford to advertise, and necessarily must hold our honey till it is wanted. Unfortunately the majority of those that do not hold are not readers of bee journals; but, be that as it may, we can all do our bit by selling just as many pounds as we possibly can in our immediate surroundings.

The Retail Package.

Our success in selling is measured largely by the quality and attractiveness of that which we have to offer for sale. Only comparatively mild and good-flavored honeys should be packed.

In presenting to the public extracted hon-

Annual Royal Show at Shrewsbury, England. Editor J. Herrod-Hempsall, of the British Bee Journal, popularizing honey in foreground at the right.

ey as distinguished from comb, we prefer the word "clear" to either "extracted" or "strained." We tell the consumer that the honey in the comb is comb honey, and that we have some clear honey in either glass or tin. We can go further and say that we extracted the honey from the comb, etc. If we give the consumers the term "extracted honey" they may consider in all probability that our product is an extract of honey, which at once would lead to confusion. As regards "strained honey," we believe that it is better that this term should be forgotten.

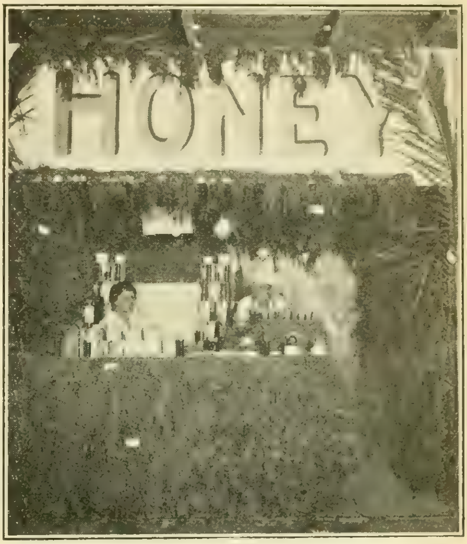
Of course all honeys should be heated before being packed. By so doing the honey has a brighter appearance, and granulation has been retarded. There is not space here to discuss the manner of heating and settling of honey and the manner of filling containers for the trade.

Experience in the beekeepers' community will determine whether it is wise to pack in glass or in tin. The label is a most important item. Its form, design and harmonious blend of colors mean a great deal in presenting an attractive article to the consumer. The name of the brand is just as important. It must "take" with the consumer. Above all, cleanliness of pack must be a factor never to be lost sight of. In order to compete with syrups we must present our article just as attractively as do the syrup manufacturers their syrup packages.

Value of Good Salesmanship.

The next step is to know how to "talk" honey. These that can do so are indeed fortunate, for it is astonishing how successful good salesmen really are. Building up a trade of satisfied customers is pleasant work. Courteousness and prompt service are quite essential in this respect. There is always a certain amount of inexpensive advertising that will bring very satisfactory results. Honey-for-Sale signs are very effective, as are also window displays in grocery stores. The alert beekeeper will always hit upon some novelty, and through his persistence and hard work will supply many of his townspeople with the most wholesome sweet which they can purchase.

Big Sur, Calif.



Honey exhibit at the Industrial Exposition at Monterey, Calif. Booth is decorated with honey plants. Various foods containing honey were also on exhibition.

THE HIVE QUESTION AGAIN

Three Veterans Discuss the Time-Worn Question of the Best Size for Hives.

By R. F. Holtermann, Jay Smith and J. L. Byer

IN a not very distant past we have heard what are supposed to be very trite sayings, that successful results from the keeping of bees are dependent upon the beekeeper. For my own part, I have always resented such a statement. Much, very much is dependent upon the beekeeper, but if the beekeeper has not a proper locality and if weather conditions and some other things are not right, a profit cannot be made out of beekeeping.

The Brood-Chamber.

However, there is a matter, which, in my estimation, has grown more and more important for quite a number of years. Much emphasis has been added to this point by an illustrated article for Gleanings, by E. R. Root, upon sagging foundation.

The persistent and public advocating of large brood-chambers for 10 to 15 years has wrought a change in public opinion. I suppose I can claim to be among those in the front ranks of the advocates of large brood-chambers, and I can well remember saying, when the ten-frame hive superseded the eight-frame, that it was only a question of time when the twelve-frame would replace the ten-frame. That change is now taking place. There are no regrets on my part for having adopted a twelve frame Langstroth hive.

The statement has also been made by me for 10 years or more to the effect that I would not hesitate to adopt that kind of hive for the production of comb honey. It is a pleasure to me to see others express such views in Gleanings. If the Dadants will say after having counted—not guessed—the instances for five years that brood has been found in the supers of their hives, that the instances have not exceeded five per cent when no queen-excluders are used, then I would adopt the Dadant hive. Where bee-escapes are used, if there is any brood in the super, the bees will not go down; and I do not care to find many such when extracting a crop of honey. In making this statement I recognize that it is a very desirable thing to have a frame of the same size in the brood-chamber and super, but it is also desirable to do without a queen-excluder.

Wasted Space in Brood-Chambers.

Often, more often than the most of us realize, a queen does not use all of the comb space in the brood-chamber, because some of the cells are not the proper size. We may blame the queen for the presence of many unoccupied cells, when it is a matter of cells built upon stretched comb foundation. I undoubtedly have many such frames in use.

In my estimation what counts in beekeeping is, not the best yield from one colony in the apiary but the average yield of the entire apiary in contrast to the yield from the best colony. If the beekeeper gets 350 lbs. from the best colony, and an average of 100 per colony is obtained in the apiary, it clearly shows that the beekeeper is far behind what can be done under best conditions, and this may be the result of stretched cells in the brood-chamber.

Brantford, Ont. R. F. Holtermann.

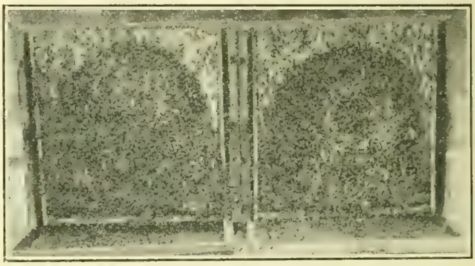
A Palace for the Queen.

In looking over the hives that have been made in the past 50 years, I have been impressed with the fact that, in a vast majority of them, little thought has been given to the main factor; that a hive should be made to conform to the wishes and whims of the queen, for the more eggs we can get a queen to lay, the more honey will that colony produce.

Hives have been made shallow in order to force the honey into the super, regardless of the fact that this also forced the queen to go on a strike for lack of convenient cells in which to lay. Divisible brood-chambers of varying size have been made, for they were convenient to manipulate although exceedingly inconvenient to the queen, since the queen will not lay outside of the cluster and since much of the area enclosed by the cluster is taken up with top-bars, bottom-bars, spaces between top and bottom bars and spaces between the bottom of the combs and bottom-bars. Thus it can be seen that "the bumblebees of the fields have holes in the ground and that hornets of the air have nests in the trees, but the queen bee hath naught where to lay her eggs" (with apologies to Matthew).

When Small Hives Reduce the Crop.

Then the craze for small hives ran rampant. The argument seemed to be that, if one could make a hive just small enough he could force every ounce of honey right up into the supers where he could get it and sell it. And the beekeeper usually felt lucky if it did force an ounce of honey up there. Naturally, the queen wanted a home suitable to her capacity; so she swarmed and found a nice big hollow tree with a cavity a foot and a half across and six or eight feet long where she proceeded to do the thing right. Some hives have been made so they can be easily hauled about on trucks to chase the honey flow. The claim for them is that they are light, easy to handle and are just the right size for one man—but hold on a minute, it is not the man that lays the eggs; it is the queen.



Brood combs 17⅝ inches square. These give the queen ample opportunity to "spread herself." How would these do in the queen's palace?

Barriers in Way of Queen.

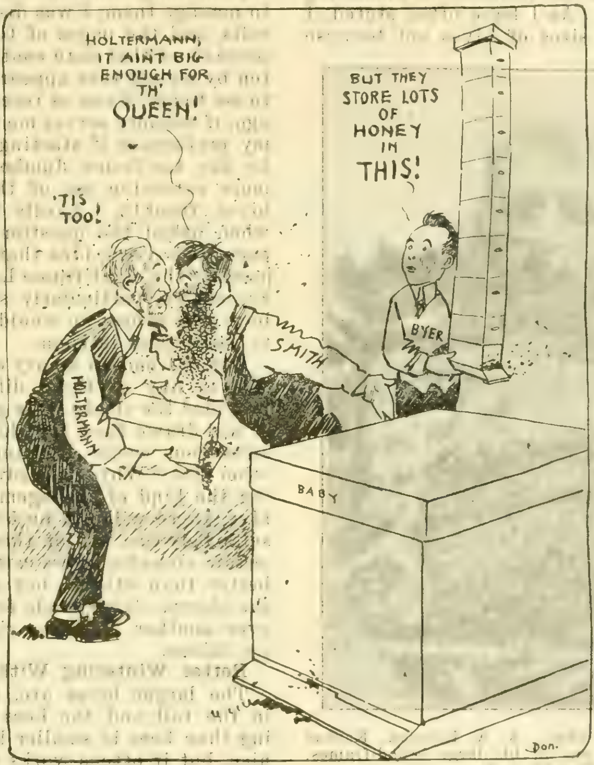
It is astonishing sometimes to see how some little obstacle will cause the queen to curtail egg-laying. I once saw a nice young queen in a Danzenbaker hive crowd five combs with brood and refuse to lay in the remaining four just because between the five she was laying in and the others there was a space of about three-fourths of an inch. She crowded the five frames so that the bees removed every cell of honey. When the frames were placed close together she at once filled them with eggs. It has frequently been noticed that a frame of foundation in the brood-nest will confine the queen to one side of it, and frequently the colony will swarm rather than pass by the foundation. Most beekeepers have observed how reluctant a queen is to go down into a lower story when once she has taken possession of the upper story. When there are no bars and spaces she will lay clear to the bottom.

We cannot force a queen to lay eggs, but we can easily force her to stop laying or curtail laying. With the regular Langstroth frame, the queen attempts to lay in a circle. She enlarges the circle until she comes to the top-bar, and then she loses valuable time. If she knew just where to go it would not take much time to cross over to the other side and begin again, but sometimes she seems lost and goes back on the same side and lays a number of rows before going over to the other side. When the hive is filled with brood it is not, as the queen would have it if she had the running of things, in a circle, but in the form of an ellipse. In cool weather this is a serious hindrance, for in an ellipse much more surface is exposed than in a globe, therefore more bees are required to keep up the necessary temperature.

Small Hives Require Much Manipulation.

Have you ever noticed after a person has used a large hive he seldom goes back to a smaller one? In my early experience with bees, I used a small hive and was always manipulating it to prevent swarming and to force honey into the supers. Along with this management I practiced spreading the brood to make the queen lay more, and I practiced stimulative feeding. The bees and I always seemed to be working at cross purposes. Whatever I wanted them to do, seemed to be the one thing they would not do. Even when I got them strong and all seemed well as they were working in the comb-honey sections, they would swarm and leave a lot of measly unfinished sections on my hands. Stimulative feeding is passing, as we are finding out that a hive chock-full of honey is the best stimulant. Spreading the brood has already passed. I am satisfied that spreading the brood invariably checks the egg-laying of the queen for several reasons. The brood-nest is enlarged, and if the weather is cool there will not be enough bees to cover it, and chilled brood results. More than this, the queen is bewildered as the nest is all disarranged, and, when she comes to a place that should contain empty cells, she finds brood, so she loses much time. Again on account of the brood being spread to too great an extent, the bees already have more brood than they can care for, so the queen ceases to lay. I have observed these things so many times that I have adopted the plan of placing every frame back in the place that it formerly occupied, whether the weather is hot or cold. I feel certain that I get more brood by this practice. In building up a weak colony, when it needs more combs they are given next to the brood, and never placed in the center of the brood-nest.

After keeping bees a number of years, I decided that a larger hive would be the thing, so I adopted the Jumbo with metal-spaced frames. Right from the start, this was a joy both to the bees and myself. It seemed that instead of the bees and me working against the interest of each other, we were co-operating. The queen would start in and lay eggs in those large circles that are always a delight to the eye. The swarming practically ceased, and the honey crop increased. Now some say that the big frames are bad to extract from. But the point is that the queen lays more eggs, hence there is more honey. I made a solemn covenant with my bees that, if they would manage to store the honey in the hives, I would in some way manage to get it out, and we are both living up to it to a satisfactory degree.


HOLTERMANN, IT AINT BIG ENOUGH FOR TH' QUEEN!
'TIS TOO!
BUT THEY STORE LOTS OF HONEY IN THIS!
HOLTERMANN
SMITH
BYER
BABY
Don.

How to Build a Palace for the Queen.

If I were starting over and could get just the kind of hive I wanted, what kind would it be? Well, I would want it to be a ten-frame hive like the Jumbo but about two inches deeper. Then I would have an extracting super just half as deep, so that, if desired, one could put on two supers and bring up a brood-frame from below, and it would fit perfectly. This would give an extracting-frame that would be midway between the present shallow frame and the Langstroth. With eight or nine of these in the super, they would be fat and ideal for extracting. If one had the ten-frame hives on hand, they could be used for supers, or any ten-frame hive equipment could be used except the brood-frames. In a hive with frames of this kind the queen would lay in a circle and would produce more bees than in a smaller hive, and of course this would be my idea of a perfect Palace for the Queen. Jay Smith.

Vincennes, Ind.

Size of Hive Less Important Than Proper Management.

Having used rather extensively about all the different- sized hives on the market during the past 20 years, possibly accounts for the fact that I am often asked as to what-sized hive I would use exclusively if starting over again in the business of producing extracted honey. As I have often stated, I have used many sizes of hives not because of choice, but rather because of circumstances over which I had little control. Working with little capital, bees were bought regardless of the kind of hive they were in, and, not being of a mechanical turn, I did not go to trouble of having hives made over but used them as they were. Just a few days ago I was asked to give my ideas on the hive question in Gleanings, and this is my excuse for again taking up a very old subject, and one in which I frankly take little interest any more myself. We have at present in our different apiaries about 600 colonies in hives of eight-frame Langstroth capacity, about 150 in ten-frame Langstroth size, some 200 in eight-frame Jumbo size, and about 400 in ten-frame Jumbo.

Another large hive idea. A. A. Rodman, Kansas City, Mo., holding one of his large brood-frames, 17⅝ x 15 inches.

Formerly Advocated Large Hives.

My grandfather was a successful beekeeper over 50 years ago, and as far back as I can remember—about 40 years—I recall how I often was with him in the apiary when but a boy, as he worked among the bees in the large hives that he used exclusively—a hive equal to about 17 Langstroth frames. So I was brought up among large hives, and naturally was of the opinion that anyone using a hive as small as the Langstroth was to be pitied. When we started in commercial beekeeping, our first purchases were bees in these large hives; and, as I had been trained in the use of these hives, naturally when I first bought an apiary in Langstroth hives, not knowing how to manage them, I was disgusted with the results, and the pages of Gleanings and other journals of that date contain criticisms written by myself that appear very funny indeed to me today. Even as recently as seven years ago, if memory serves me right, I stated that my preference if starting over again would be the ten-frame Jumbo. Today, after a more extensive use of these different-sized hives, frankly, I hardly know what to say when asked the question as to my preference. I have an idea that, if put to the test, possibly the eight-frame Langstroth would be the choice, particularly so because my two boys now grown up would certainly urge me to make that decision.

But if I had an apiary of any considerable size in any of these different-sized hives, provided the combs were good straight worker and drawn from foundation, under no consideration would I change them into any other size. Why? Simply because by applying the kind of management suited to each hive, there will not be 5% difference in results between any of them. There may be certain climates where certain-sized hives are better than others; but as I read some of the absurd claims made for one kind of hive over another, it seems ridiculous as I now see things.

Better Wintering With Smaller Hives.

The larger hives are, as a rule, heavier in the fall and the bees require less feeding than bees in smaller hives. This sounds nice, but it oftens works out otherwise. We always have to feed the colonies in Standard eight-frame Langstroth hives heavily, and with us that size of hive is not safe for winter till the bees refuse to take any more syrup. For the past few years, since adopting that system of feeding for winter, the small hives have invariably wintered the best. This is not necessarily because the hives are small but because they have an abundance of good stores, and the combs are so solid with stores during early winter that but little brood-rearing can take place to wear out prematurely the old bees, and the colonies come through vigorous and strong.

We do not worry as to whether there are enough empty combs for bees to cluster on. We have often had colonies on solid combs of stores the first of November when a temperature near zero came three weeks later. Bees will not die under those conditions, even if experts say they will. Try it and be convinced. With our large hives we feed less, and quite too often the natural stores prove to be poor for wintering. It is needless for me to comment on just what happens under those conditions. This year the only dysentery we have noticed was in one yard where the hives are very large and the bees had a large amount of natural stores. Some colonies actually perished on combs of honey mostly granulated, and everything inside the hive was a smeary mess.

Standard Frame Easier to Handle than Jumbo.

Then again since disease has become so common in our section, the Standard comb is much more easily handled than the Jumbo, and aside from the disease question, in ordinary manipulation the Standard combs handle the nicest. Commercial beekeeping seems to be fast drifting to the central-extracting plant idea, and here again a smaller frame is best for reasons that need no explaining. In conclusion, let me say that I have no thought of "knocking" anybody or any particular hive in saying what I have. Commercial beekeepers are free to use what they like, just as I am doing, and I can only hope that beginners who may have exaggerated ideas as to the merits or demerits of any particular hive may have their minds cleared of such ideas, as one hive will give practically as good results as another, provided each size is given the management suitable in each case. I can only repeat what I said in the beginning; and that is, if I had an apiary in any of these different-sized hives, that I would not change them into any other simply because I thought I would get more honey, for, after our varied and rather extensive experience with all the hives on the market, I positively know that there is little in such a contention. J. L. Byer.

Markham, Ontario.

OPERATING 10,000 COLONIES

How One of the Most Extensive System of Apiaries in the World is Managed

By E. R. Root

ONE hundred apiaries over a range of 200 miles; 100 apiaries of an average of 100 colonies each, or a total of 10,000 colonies of bees, with an annual production of over 2,000 barrels of honey of 550 pounds each—such, in brief, is the story of a man and his sons who possibly are producing more honey and shipping it to Europe than any other one man or family in the United States or the West Indies. There are syndicates or corporations in Honolulu that perhaps own and operate 100,000 colonies of bees; but no other single individual or family, so far as I know, unless it is our friend, J. J. Wilder of Waycross, Ga., owns and operates so many bees.

Mr. Hernandez started shortly after the Spanish-American war. At that time, he did a general export business. He bought up a lot of honey and sold it in Europe, but lost in the deal. He knew little or nothing about bees, and, as he said, this experience in the honey business was enough to cure him. Some of the beemen asked him if he could not sell their honey for them. No, sir; he would not buy and sell again, but he might handle the honey on commission. The deal was made, and both he and his friends made money. This convinced him that he could do something in the way of selling honey. Could he produce it? To make a long story short, Mr. Hernandez calmly bought up 1,500 colonies of bees for a start. Instead of making the mistake that most people do who go into the business heavily, he and his sons made a success of the business at the very beginning. His oldest son, who had studied at one of the universities in this country, became interested. He read his A B C of Bee Culture over and over before he did anything with the bees. In fact, he became saturated with the theory, and hence all he needed was practice. He then went among the bees, and it was not long before he was telling some of the old hands some new tricks of the trade that he had read about in his A B C book. The other boys, with the father, in the mean time took a hand in the business; and, as we would say in American parlance, they made a "howling success."

Transporting Honey by Mule Trains.

This remarkable family of father and sons increased their holdings of bees from an initial start of 1,500 colonies until they had 10,000 in 100 different apiaries scattered over remote places, many of which were accessible only by mules. The business got to be so large that they organized mule trains to carry honey to and from the yards that could be reached only by trail. They had galvanized cans made in such a way that they could be loaded on a mule with a special saddle, each mule carrying from 240 to 300 pounds of honey. In each mule train there would be from 10 to 12 mules with one driver. Strange to relate, these mule trains make anywhere from 25 to 50 miles a day; and 10 mules—figure it out for yourself—would actually carry a ton of honey. Of course, at other apiaries where there were good roads gasoline or rather alcohol trucks were used to carry honey to and from the yards. Of course, these are much more efficient where road conditions make their use practicable.

The oldest son, Louis E. Hernandez, whose pictures are here shown, and to whom, it must be said, great credit is due for "reading up" on the subject thoroughly before he began work, is the business manager. He does not now work among the bees, but manages the business and sells the honey, meeting some of his trade face to face.

Producing More Than a Million Pounds of Honey Annually.

Let me make it plain that the senior Hernandez and his sons are producing Bellflower honey, or what is called in Cuba and

Louis E. Hernandez, sales manager for the Emilio Hernandez Co.

Europe Campanilla. Their annual crop of this honey reaches the enormous aggregate of over 2,000 barrels of 550 pounds each. The honey is packed in barrels in such a way that it will not leak; and, moreover, the product is in no sense the ordinary Cuban honey of all kinds of colors and flavors, with dirt and dead bees mixed with it, but is a strictly high-grade clear honey produced with the most modern appliances and meth-of management, and, of course, it brings the best market price that a good, clear, well-flavored honey ought to bring. About 60 per cent of the honey is white or light. The rest is slightly on the amber color.

During the Great War the Hernandez people were doing a paying business, producing as well as buying and selling. While they had an almost unbroken line of success in the start, like almost everybody else engaged in the honey business they were hit hard by the terrible slump in 1920 that drove many a person into bankruptcy. If they had not been well heeled financially they never could have stood the loss. When I asked Mr. Hernandez if he had any objections to telling his actual loss he said "Sure not." They lost to the extent of $100,000; and the mistake they made was that they did not quit buying six months before they did. Had they just gone on and produced honey without buying any, their loss would have been comparatively light. Even as it was, they weathered the storm, and now stand out as the most extensive beekeepers in the world, for one person or family.

Louis E. Hernandez, who called at the office of Gleanings, looks as if he might be not over 30 years of age; but he is just 40—40 years young. He and the other members of his family are evidently making a fine thing by all working together. Two of his brothers are in the apiaries constantly, together with the father, who, at the age of seventy, is still very much of a beekeeper, and able to keep up his end of the job.

This is the way the father and the boys are lined up in the business: Emilio Hernandez, the father, and owner of the business; Louis E. Hernandez, general manager; Juan P. Hernandez, office manager; Alberto Hernandez, general manager of the apiaries.

There is one other son, a dentist, not connected with the apiaries—Dr. Carlos Hernandez, Pennsylvania University.

These men, with the exception of the last mentioned, run this big business. While the father is sole owner of the business, the boys know that at his death the property will come into their hands on an equitable basis.

We secured three photos of Mr. Hernandez while he was here. If you ever have an opportunity to shake hands with him you will find he is able to converse with you fluently in both English and Spanish; and there is scarcely a trick of the trade in the production of honey that he does not know.

The moral that comes to us, it seems to me, is this: If you are going to start in any business, read up, study, and saturate yourself with all the information you can get. Keep your text-book before you as you begin to put your reading into actual practice; then, perhaps, you can start with bees or anything else in a large way and make it succeed.

Uses Standard Langstroth Equipment.

I asked Mr. Hernandez what kind of hive and brood nest he used.

"Regular standard Langstroth hive," he replied.

"Do you breed up in one or two stories?"

"One, two, or three, as the case may be," he replied.

"Do you use queen-excluders?"

"We do not. The honey flow takes care of that. We breed usually in two stories. These two will be full of brood and young emerging bees, when the honey flow comes on. When it does come it comes with such a rush that the cells vacated by the young bees are filled with honey. The breeding-room of the queen is therefore automatically curtailed, but not until the queen has had a chance to supply eggs for a populous colony in time for the main honey flow.

"Do you have much trouble from swarming?"

"Very little after the main honey flow comes on, although we have some before that time arrives; but not a great deal of it, because the queen has range of as much room as she needs, when Nature steps in and checks the breeding by flooding everything with honey."

This condition of bees, not swarming after the main honey flow is on, is found in many parts of the South, and in some parts of the North where the flow is exceptionally heavy and continuous. It is very convenient because it enables the apiarist to forget about swarming and give his whole attention to providing room.

Buying 5,000 Queens at a Time.

"How often do you requeen?" I asked.

"As often as we can with 10,000 colonies. We raise a good many queens and buy some," he answered.

"You must buy a good many at times," I remarked.

"Yes," he said, "we have bought as many as 5,000 at a time from different breeders in the southern United States, and some of these breeders have come back, wanting to know what we were doing with so many queens. They did not know that we had 10,000 colonies of bees, and that our needs would be somewhat extensive."

"Then you believe in young queens?"

"Yes, sir, and we would requeen every year if the expense were not too great."

"Do you use power extractors?" I asked.

"No," he replied; "because hand power is cheaper than gasoline power which our help can not operate to good advantage."

In this connection he said something that interested me greatly; and that was that the Cubans with their cheap molasses are able to make a denatured alcohol for running automobiles that is cheaper than gasoline, cleaner, and much less inclined to carbonize the cylinders. This only leads me to observe that we should be doing that same thing in this country—making a motor fuel that is as cheap as or cheaper than gasoline. If the farm produce that is now going to waste, merely rotting, were converted into denatured alcohol it would give us vast quantities of cheap motor fuel that would help to hold in check the monopoly on gasoline, if there is one.

A Trick of the Trade Worth Knowing.

In the course of the conversation Mr. Hernandez mentioned the fact that his people had no trouble in shipping honey in barrels without any leaking or smearing. He explained that it is perfectly easy (a fact well known to exporters and importers) to cooper a barrel so it will not leak. Barrel staves, of course, are wider in the middle than at the ends. When the staves are assembled the hoops gradually draw these ends of the staves together against the heads of the barrels, and this very drawing together of the hoops causes the middle of the staves to bind very tightly, while the ends tend to push away from the curved line and from each other. This has a tendency to leave a slight gap between the ends of the staves. If there is any leak in the barrel at all it will be at the ends of the barrel rather than in the center. To overcome this trouble exporters have been in the habit of using rush or reed stems or leaves, and inserting them between the staves, from 10 to 15 inches from the ends. These rush leaves or stems, as the hoops are drawn down, will be squeezed between the ends of the staves. When the barrel is coopered tightly, this caulking, so to speak, closes up any possible gap. If there should be a slight tendency to leak, the rush leaves or stems will expand and close the opening.

Louis E. Hernandez talking with A. I. Root at Medina.

Probably not many in this country are shipping honey in barrels; if there are any, they will do well to observe this precaution. Some people call the rushes "reeds." The kind that is used for caulking barrels is obtained from Holland and England. They are sold in large quantities for that purpose. Of course, there are some rushes or reeds that are better than others.

In some cases, bananas leaves are used in places of the rushes. They are not so good, however. Anything that has a pithy or spongy center and which can expand or be compressed like a rubber gasket in a steam joint will answer the purpose.

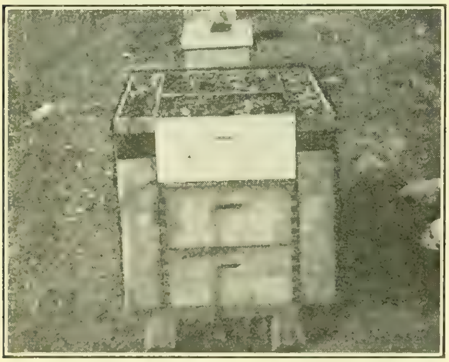
FROM THE FIELD OF EXPERIENCE

A SIMPLE PACKING METHOD

Winter Packing-Case Having Packing Material an Integral Part of its Panels

Last winter I tried a packing method for two two-story hives placed together, which called for removing three frames from both bodies of each hive and using the vacant space, which was opposite the second hive, for packing. To keep the packing material (forest leaves) from the remaining combs, a two-story tight division-board was used. I found it best after removing the six frames to place the inner cover over the bees while packing the vacant space. This packing was done before the hives were moved together.

On top of these hives were placed two hive-bodies with a piece of burlap between them. This burlap was to make a tight fit and prevent the escape of heat upward between them. These bodies were also packed with forest leaves and covered with a bee-escape board upside down.



Shallow trays filled with packing stapled to ends of hives. Sides are packed with division-boards and empty supers hold packing on top.

The front of the two hives was protected by a box of the same depth as the three hive-bodies, plus the thickness of the inner cover and an escape-board, and as long as the width of the two hives—32½ inches. The width of the box was six inches on the inside, which was the thickness of the end packing used. The bottom and ends of the box were of ⅞-inch material. The outside was of ½-inch tongue and groove ceiling. The side that was to be placed next to the hive was of burlap. The purpose of the burlap was to take up all irregularities of the hive fronts and make, when this box was packed, a perfectly tight union with the hive. The box rested on the end strips of the bottom-board and was secured to the hives by four hive-crating staples. The entrance, which was not changed in any way, except that the entrance cleat was placed in position, was protected from ice and snow by the overhanging packing box. The backs of the hives were protected in the same way, except that the box was 1½ inches deeper so that the back end of the bottom-board could be covered. The cover of this case consisted of a piece of tar roofing with a lath tacked to each end. For bottom packing, leaves were stuffed under the hives. These leaves did not absorb moisture from the ground, and were perfectly dry when removed in the spring.

Tarred paper cap in place completes the job. Entrances are below the front packing.

When I packed these colonies the seven frames in the top story of each colony were solid with honey, and when the fruit-bloom honey flow started in the spring I feared more room would be needed, so I removed the packing from the hive-bodies which were on top and then took the block off the escape hole in the inner cover below. The bodies were then filled with three frames of honey and seven empty combs. One of the colonies, which had a young queen, promptly took possession of this third story and started moving honey to it from below, as well as using it for the storage of incoming nectar. The other colony, which had an old queen, did not make use of these extra combs up to the time they were unpacked, about May 10.

In unpacking, the four staples holding the front case were drawn, and the case with the packing was lifted off. This was carried to another part of the yard and laid flat, wood side down, on two logs. The back case was then removed and laid on top, burlap side down. These then were covered with tar roofing and will be left until fall when they will be ready to go back, already packed, on the hives. To carry this point still further I intend to build a tray of ½-inch material with a burlap bottom, to take the place of the two packed hive-bodies. In the spring the tray will be laid aside without disturbing the packing, and in this way I shall eliminate the handling of all loose packing, with the exception of that which goes inside the hives and underneath. It was the work of only a few minutes to remove the inside packing and the division-boards, and add the six frames to each colony. The colonies were then ready for the honey flow. Geo. Harrison, Jr.

College Park, Md.

* * *

NATIVE BEES IN AFRICA

Excessive Swarming, Small Colonies and but Little Honey Among Wild Bees

I have been spending some months at Choma, North Rhodesia, just a little nearer the equator than latitude 17 S. There is always blossom in the bush and, I should think, a good honey flow three or four times a year. If bees could be induced to work for us as the negroes do (though they work very little for themselves), a lot of honey ought to be gathered in this country. As it is, a wild bees' nest is not worth robbing.

The native bee is considerably smaller than the European, and the cells of its comb are of course in the same proportion. I noticed them in two colors, brown like the German bee and with several yellow rings like the Italian. The brown I never observed at home, all the nests I saw being yellow. They inhabit small cavities in the trees or in ant hills, and when these are full they swarm out at all times of the year, only a handful of bees, to start similar unambitious colonies.

The honey that the natives bring in is always lamentably thin. Probably the colonies are not big enough to ripen it properly, though the process ought to be easy enough in this dry climate. Is it likely that the Italian bees in a big hive would make a much better product from the same raw material?

I saw several nests chopped out, after the honey guide (bird) had led us to the place by flying backward and forward chattering like a stonechat. I found the native bee-hunter acting on a bit of bee wisdom that I have never seen utilized elsewhere.

Have you ever noticed that when a bee comes out from the back of the hive at the time you begin to uncover the frames, it is only moderately angry and after a turn or two goes in again at the front? Well, do you know what happens if it finds the front entrance closed? The native does, and he begins operations by closing the front and chopping at the back. Soon, the bees begin to come out at the back hole, wing round to the front and there stick on the closed entrance in a cluster like a swarm. By the time the honey is reached, there are few bees in the nest, and those are young ones not very likely to sting. Just a little smoke is used, by pushing in a burning stick, and I believe it is almost unheard of for the operator to get a sting.

The three or four nests I saw chopped out yielded literally not a drop of honey. The time was quite near midwinter. Swarms were still flying; but, on days that in England would be accounted superlatively fine, few bees would be flying from established nests. The nests we chopped out had apparently been established a bare three weeks. There were just enough bees to cover the brood. The queen had practically ceased laying and was awaiting the birth of the first batch of nurses, when all would soon get lively again. Meanwhile the colony was literally living from hand to mouth, collecting each day only nectar enough for the needs thereof.

Only a few days after midwinter, so near that you could say only a few hours, a big and varied bloom of flowers appears. Some of these are very nectariferous, for example the sugar bush covering thousands of acres. About September the bigger trees blossom tremendously, and from October to Christmas the veld is covered with flowers. The drawback of the tropics seem to be that nectar is so abundant and easy to get that the bees do not trouble to gather it in advance of the week's requirements. New bees of whatever strain would probably soon tumble to the same argument and cease to accumulate the store that only winter makes necessary in our work-provoking climate. G. G. Desmond.

Sheepscombe, Stroud, Gloucestershire.

* * *

HOW TO SELL MORE HONEY

Canvassing the Consumer for Orders to be Filled Through the Retailer

I have been reading, with a great deal of interest, different articles on marketing honey. All these articles are good, that is, all that have been in Gleanings; but there is one thing I have not noticed yet in any article on marketing honey, and that is, canvassing the consumer through the retailer with an organized force of canvassers or salesmen.

There is not any surplus of good table honey and never will be; all that is needed is to get this good honey to the consumer, not the retailer, but the people who eat it, through the retailer. This will advertise honey far more and better than advertisements run in any periodical, and at the same time dispose of the honey and make new customers. Of course, it must be packed right, and I find that the 5-pound pail of chunk honey, is coming along mighty fast.

All beekeepers will do well to remember this, another season, and prepare for it.

I have 15 colonies of bees myself, and had a surplus of nearly 1,000 pounds of honey to market. I sold all this honey and have bought 2,400 pounds from other beekeepers, and can sell a lot more if I can get the honey packed right and the grade of honey I need.

I simply go out, make a canvass of the consumers and sell my honey at retail prices. Where you have many tons for sale, you will not be able to sell it all in this manner; but you can go to your retail merchant and make arrangements with him, then canvass his trade and deliver through him, and he will always buy two to three and four times as much honey as you sell to his customers through him.

I am figuring with a large honey producer on handling his whole crop another season, and the manner in which I mean to dispose of it is by organizing a crew of canvassers and working through the retail merchant. I can easily get enough over market price to pay the canvassers and all expenses, and still sell all the honey I want to sell. Why not advertise and sell our honey in this way? Any large producer can handle his crop in this manner, and then a few of them can get together and pool, and do still better. There is positively no need of dumping your honey on a glutted market, for the people want good table honey if you will get it before them, and it is no great problem to get it before them.

I worked for a large specialty manufacturing concern for many years, and we did most of our advertising by canvassing the consumer through the retail merchant. That concern is one of the largest manufacturers of soap specialties in the world, and that kind of advertising paid them, and paid them well. I want to say that I live in a section sparsely settled compared with most sections of our country, yet I can sell many times as much honey as I have sold each season, and not glut my local market.

Cameron, N. C. Luther A. Fink.

MAKING AN INDUSTRY

What the Extension Division of the Louisiana State University is Doing for Beekeeping

More than 400 boys received instruction in bee culture during the boys' and girls' short course in August, at the Louisiana State University.

Beekeeping is fast becoming one of the important industries of the state, this fact being forcefully brought out at the Ninth Annual Boys' and Girls' Short Course, which was held at the Louisiana State University during the first week of August, when more than 400 club boys received daily instructions in bee management from E. C. Davis, the extension bee specialist.

Not only did Mr. Davis lecture on the main topic relative to bee culture, but he gave actual demonstrations, and had the club members assist him.

"I have learned more about bees in one day than I ever knew before," said one boy, "although my father has kept bees all of his life."

During the first day of the short course a monster parade was held. There was a decorated float representing each phase of club work, and one of the most interesting was the bee float.

FROM THE FIELD OF EXPERIENCE

A flower trellis with several honey producing flowers was placed on the front of the float, while on a dais scores of honey jars of various hues surrounded two modern frame hives. On top of these was placed a ''skep'' or hive that is used in Europe. When half a score of pretty beekeepers were seated on the float, above which was the legend, ''Have You a Little Honey in Your Home?'' it was agreed by all that there could have been little added to increase its effectiveness.

''There is no reason why Louisiana should not rank with the leading honey-producing states, for nearly every kind of honey flower known grows here,'' said Mr. Davis.

''We have the willow in the central-southern portion of the state, from which the most delicious honey is made, not to mention the white clover which lasts until July.

''With several hundred boys and girls learning how to handle bees properly, we may well expect some radical changes to take place in the old hit-or-miss system, as practiced heretofore,'' says the bee expert.

For the first time in the history of Louisiana a law affecting the bee industry was passed by the 1922 Legislature. This act, known on the statute books as No. 88, introduced by C. P. Couvillion, himself a beekeeper, was passed to prevent the introduction into and dissemination within the state of contagious and infectious diseases of honeybees; providing for the eradication of bee diseases; authorizing the Department of Agriculture and Immigration of the state of Louisiana to make rules and regulations for carrying out the provisions of this act; prescribing a penalty for violations, and providing a revenue.

All honeybees shipped or moved into the state shall be accompanied by a certificate of inspection signed by the state entomologist, state apiary inspector or corresponding official of the state or country from which such bees are shipped or moved. These certificates must certify to the freedom of the bees, combs and hives from contagious diseases.

The Department of Agriculture is also given full power to deal with American and European foul brood, Isle of Wight disease, and all other infectious and contagious diseases. The shipment or movement of second-hand beehives, honeycombs, frames or

IN YOUR HOME
BEE CULTURE
HONEY

Attractive bee club float in parade during the ninth annual boys' and girls' short course at Louisiana State University.

FROM THE FIELD OF EXPERIENCE

other bee equipment into the state is forbidden except under such rules and regulations as may be prescribed by the entomologist in accordance with the law.

For the purpose of carrying out and putting into effect the provisions of the act, the Department of Agriculture is empowered to levy and collect such charges as may be necessary, but which shall not be more than the following rates:

On each individual partnership or corporation having not more than 25 bee colonies, the sum of 25 cents on each colony. On over 25 colonies and not over 50 colonies, the sum of 20 cents on each colony. On over 50 and not over 100 colonies, the sum of 12½ cents on each colony and on those having more than 100 colonies the sum of 10 cents on each colony. The money so collected will be receipted and deposited as a separate fund in the state treasury for the benefit of the honeybee industry of the state.

Every leading beeman in the state was behind the bill, as well as the state and parish farm officials and the extension department of the Louisiana State University.

Baton Rouge, La. Bentley B. Mackay.

* * *

HELPFUL HONEY HINTS

How to Utilize Its Delicate, Delicious Flavor in Cookery

Honey is usually known simply as a spread for bread, but it has many varied uses in cookery. It is wholesome and nutritious, and supplies the same food in the diet as sugar, and may replace fat to a certain degree. It is especially valuable for its delicate, delicious flavor.

In cookery it answers the same purpose as molasses, but has a more delicate flavor. Less soda is used with it than with molasses. Only one-fourth to one-half of a level teaspoon of soda is used for a cupful of honey. In substituting it for sugar, a cupful replaces a cupful of sugar in sweetness, but it contains more water; hence, one-fourth cupful less milk is used in the recipe. A honey cake made with butter will keep until the butter becomes rancid, and made without butter will keep for months and even improve in flavor. This is also true of the dough.

The standard recipe for a honey cake is: three-fourths cup honey, one-half cup sugar, two cups or more flour, one-fourth teaspoon powdered ginger, one-half teaspoon powdered cardamom seed, one teaspoon cinnamon, one-eighth teaspoon cloves, a speck of pepper, a pinch of salt, one-fourth to one-half teaspoon soda, one tablespoon water, and two ounces of blanched almonds cut in small pieces or chopped. A cake made by stirring the flour directly into the cold honey is found to be in no way inferior to those made with honey which has been heated. Thus it is not necessary to follow some of the old cookbooks in this respect. Likewise, it is not necessary to boil the spices with the honey before putting into the cake, nor to let the dough stand a day before adding the soda and baking powder. It is a little easier to knead the dough after it has stood over a day, since less flour is needed on the board, but it is not necessary to let it stand over. Honey cakes on standing become more tender and soft.

I find that honey gives a very fine flavor to breads and cakes. Here are some tested recipes:

Honey Bread.

2 cups honey, 4 cups rye flour, 1 teaspoon soda, 4 teaspoons aniseed, 2 teaspoons ginger, 4 teaspoons powdered cardamom seed, 2 egg-yolks, ¼ cup brown sugar.

Sift the flour with the spices and soda and add the other ingredients. Put the dough into shallow buttered pans to the depth of about an inch and bake in a hot oven.

Butter Honey Cake.

1½ cups honey, ½ cup butter, 3 egg-yolks, 5 cups flour, 2 teaspoons ground cinnamon, ½ teaspoon salt, 1½ teaspoons soda, 2 tablespoons orange-flower water (water may be substituted), whites 3 eggs.

Rub together the honey and butter; add the unbeaten yolks and beat thoroughly. Add the flour sifted with the cinnamon and the salt; and the soda dissolved in the orange-flower water. Beat the mixture thoroughly and add the well-beaten whites of the eggs. Bake in shallow tins and cover with frosting made as follows:

Orange Frosting for Butter Honey Cake.

Grated rind 1 orange, 1 teaspoon lemon juice, 1 tablespoon orange juice, 1 egg-yolk, confectioner's sugar.

Mix all ingredients but the sugar and allow the mixture to stand for an hour. Strain and add confectioner's sugar until the frosting is sufficiently thick to be spread on the cake.

For the cinnamon in the butter honey cake the following mixture of spices may be substituted:

½ teaspoon ginger, 2 teaspoons cinnamon, 1 teaspoon ground cardamom seed, 1 teaspoon cloves, ¼ teaspoon nutmeg, ¼ teaspoon white pepper; chopped citron or nuts may also be added.

This mixture may also be flavored with ginger, aniseed or cardamom seed.

Honey Sponge Cake.

½ cup sugar, ½ cup honey, 4 eggs, 1 cup sifted flour.

Mix the sugar and honey and boil until the syrup will spin a thread when dropped from the spoon. Pour the syrup over the yolks of the eggs which have been beaten until light. Beat this mixture until cold; then add the flour and cut and fold the beaten whites of the eggs into the mixture. Bake for 40 or 50 minutes in a pan lined with buttered paper, in a slow oven.

This cake can be made with a cupful of unheated honey in place of the honey and sugar syrup, but the quality is not quite so good.

Yellow Honey Cake.

½ cup sugar, 2 egg-yolks, ⅔ cup honey, ¼ teaspoon cinnamon, ⅛ teaspoon cloves, 1½ cups flour.

Sift together the flour and the spices. Mix the sugar and egg-yolks, add the honey, and then the flour gradually. Roll out thin, moisten the surface with egg-white and mark into small squares. Bake in a moderate oven.

Honey Cookies.

⅔ cup honey, ⅔ cup sugar, 2½ cups flour, ½ teaspoon soda, 1½ teaspoons cinnamon, 1 teaspoon cloves, 1 teaspoon allspice, 2 ounces finely chopped candied orange peel, ¼ pound walnut meats finely chopped.

Sift together the flour, spices and soda, and add the other ingredients. Knead thoroughly, roll out thin and cut with a biscuit cutter. These cookies are very hard.

Honey Cookies.

¾ cup honey, ⅔ cup sugar, ½ cup milk, 3 tablespoons lard, 2 egg-yolks, 4 cups flour, ½ teaspoon salt, 1 teaspoon ground cinnamon, ½ cup finely chopped almonds, ½ teaspoon soda or 2 teaspoons baking powder.

Bring the first four ingredients to the boiling point and allow the mixture to cool. Sift together the flour, cinnamon and soda or baking powder. Combine all the ingredients. Roll the mixture out thin on a floured board. Cut out and bake in a moderate oven on tins which have been greased and floured. To prepare the tins properly, brush them over with melted butter and sifted flour, turn them over and shake off as much as possible of the flour.

Honey Ice Cream.

One quart thin cream, ¾ cup delicately flavored honey. Mix ingredients and freeze.

Honey Ice Cream.

One pint milk, yolks 6 eggs, 1 cup honey, 1 pint cream.

Heat the milk in a double boiler. Beat together the honey and eggs, add the hot milk, return the mixture to the double boiler and cook it until it thickens. Add the cream and, when the mixture is cool, freeze it.

Honey Icing.

One cup granulated sugar, ¼ cup water, ¼ cup honey, 1 egg-white.

Boil together the sugar and the water for a few moments and then add the honey, taking precautions to prevent the mixture from boiling over, as it is likely to do. Cook until drops of the syrup keep their form when poured into cold water, or to about 250 degrees F. Beat the white of the egg until stiff, and when the syrup has cooled slightly pour over the egg, beating the mixture continuously until it will hold its shape. This frosting is suitable for use between layers of cake, but is rather too soft for the top. It remains in good condition and soft enough to be spread for many weeks and, therefore, can be made in large quantities for use as needed. After eight months, such icing made in this laboratory was found to be in good condition and soft enough to cut.

Honey Fudge.

Two cups sugar, ½ cup honey, ½ cup water, 2 egg-whites, 1 teaspoon of vanilla extract.

Boil together the sugar, honey and water until the syrup spins a thread when dropped from a spoon (about 250 degrees F.). Pour the syrup over the well-beaten whites of the eggs, beating continuously and until the mixture crystallizes, adding the flavoring after the mixture has cooled a little. Drop in small pieces on buttered or paraffin paper.

The vanilla may be omitted.

Mrs. Doris W. McCray.
Cedar Rapids, Iowa.

BEEKEEPING IN ONTARIO

Work of the Ontario Agricultural College and the Ontario Beekeepers' Association

"Distant pastures look green" is an old and true proverb. Sometimes, on arrival, however, we find those pastures prove to be a mirage and unreal, and the pastures left behind are in reality more profitable and greener than the new surroundings. Many beekeepers in various parts of the states have, from time to time, heard of one state or another as possessing some wonderfully good locations, from the beekeepers' standpoint. While this article is not written with the idea of alluring beekeepers to Ontario, a brief summing up of our beekeeping resources will be interesting to those in other parts.

Six tons of honey from 30 colonies increased to 50 this year. Apiary of F. K. Krouse and sons, located 20 miles from Guelph, Ontario.

Geographically speaking, Old Ontario is in about the same latitude as lower Michigan, New York, and central and southern Wisconsin; while New Ontario stretches to the north of Minnesota, northern Wisconsin and the upper peninsula of Michigan.

Before touching the practical side of the subject, the following is a brief history of

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the educational side: Beekeeping has been taught at the Ontario Agricultural College, Guelph, since 1909. Credit must be given to Morley Pettit for his work as provincial apiarist and head of the department of apiculture for nine years, as being largely instrumental in placing apiculture in the position it occupies at the present time. Today we have a fine stone and brick building, devoted entirely to apiculture, which cost about $60,000. We have an apiculture option leading to a bachelor's degree, at the end of the four years' course. The apiculture option is based on biological subjects, and students taking this option must have at least two years' experience with a commercial beekeeper. This insures that the graduates will be practical as well as receiving the scientific training. The apiary consists of about 200 colonies, including a special queen-breeding apiary. There are two annual short courses, one of two weeks in January and a one week's course in June.

The new apicultural building of the Ontario Agricultural College, Guelph, Ont. It is said to be the finest building devoted wholly to beekeeping in America.

Ontario has a successful beekeepers' association, with a membership this year of nearly 1500. Our annual conventions are always well attended, and speakers from various states in the Union have declared that our attendance is larger than that of any similar convention elsewhere in North America. This year the association has purchased honey containers, supplies, over 3000 queens and 2500 nuclei and package bees for its members. At the annual convention, to be held at the Prince George Hotel, Toronto, on December 6, 7 and 8, we expect to launch a co-operative buying and selling organization, and in view of the volume of business done during the year, amounting to over $70,000, without special organization, there is every prospect of a successful start. At the Canadian National Exhibition held in Toronto from August 26 to September 9, the association staged a honey exhibit and sold over $3000 worth of honey, in packages up to 10 pounds, mostly in glass packages of one pound and less.

Coming directly to the practical and commercial side of beekeeping, Ontario is very favorably situated. In the spring our main sources of honey are from willows, soft and hard maples, elms, dandelion and fruit bloom. Our main summer sources are from the white Dutch and alsike clovers, with basswood and the sweet clovers, the latter becoming more abundant each year. In the north, wild raspberry and fireweed or willow-herb also provide a good surplus. In the fall, buckwheat, goldenrod, boneset and asters are found in many localities and prove good yielders. Nature has been kind to Ontario beekeepers in that the honey flows are usually well defined. Our spring sources yield amber honey, our summer sources a fine quality table honey, and our fall sources dark amber or dark. Careful beekeepers have little trouble in keeping each color of surplus separate so that we have a very high percentage of light honey.

Many of our commercial beekeepers are favorably known throughout North America, and among them are members with nearly 1000 colonies. Some of our largest crops this year will run from 50 to over 100 tons.

It is not easier for inexperienced beekeepers to succeed in Ontario than elsewhere, but we believe that there are few, if any, other places in the world that will yield so large an average of fine quality table honey as Ontario, Canada. The number of beekeepers in Ontario has undoubtedly decreased in the past decade, but the number of commercial beekeepers and colonies has materially increased.

Our annual convention is open to any beekeeper, and a card addressed to the secretary's office, O. A. C., Guelph, will bring a program. A special invitation is quite unnecessary. We could tell of many other advantages which Ontario possesses but will leave these for the convention.

Guelph, Ont. F. Eric Millen.

* * *

HONEY PRODUCERS' LEAGUE

What It Has Been Doing and What It Expects to Do

The program which the Executive Committee of the American Honey Producers' League has laid out for the coming year is as follows: Publishing the booklet on laws pertaining to beekeeping and beekeepers, establishing a means of contact with individual members, furnishing warning signs, and taking up beekeeping problems that demand national attention.

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Plans are now being made to publish the Legal Aid Booklet and furnish it at cost to members of the American Honey Producers' League.

Nothing important this year in the way of a national advertising campaign will be undertaken, as there are not sufficient funds available to make any progress in this connection.

Our most important effort at this time will be to establish contact with the individual members of the League through a monthly bulletin to be either mimeographed or printed. We do not have the names of all the members of the League and would appreciate having any beekeeper, who is now a member, write to the secretary, Dr. S. B. Fracker, State Capitol Annex, Madison, Wisconsin. If you have not paid your dues for 1922, do so at once and also send in your dues for 1923.

The League has established one important piece of service which has been of considerable value to a number of beekeepers. This service is the warning sign, which has helped to prevent losses in out-apiaries wherever posted. Some of our beekeepers report that they have always had difficulty with thieves until they put up these signs. In practically every case these signs had the effect of stopping the trouble. As these signs cost only 25c each, it will pay each beekeeper who is a member of the League to provide himself with one or more signs for his outyards. These can be secured by writing to the secretary.

The Schedule Committee of the League has again arranged a series of meetings, including the group of the northeastern states, the central western states and the Pacific northwest. In this connection our program includes an organized effort to secure better co-operation among beekeepers and beekeeping organizations. In order to accomplish this, it is necessary to have the moral and financial support of all beekeeping organizations in the United States. In fact, nothing can be done without the beekeeper. Let every beekeeper put his shoulder to the wheel and help to make this co-operative effort successful.

The Fordney-McCumber Tariff Bill was signed by the President on September 21, and from that time on all honey coming into the United States from foreign countries will be taxed an import duty of 3c per pound. This replaces the former duty of 10c per gallon, which has been in effect since the 1913 tariff bill.

Now that the new tariff on honey has been established, it should be known among beekeepers that the American Honey Producers' League is greatly responsible for this tariff. There is a question in the minds of some beekeepers as to whether or not this tariff is desirable; but, regardless of whether we are right or wrong, the power which a united beekeeping organization may have in national affairs should be pointed out to our beekeepers.

Every beekeeper must put his shoulder to the wheel to make this national organization successful. Nothing can be done without the beekeeper, and the League solicits your support. H. F. Wilson.

Madison, Wisconsin.

HONEY-SELLING HINT

How to Impress upon Physicians the Food Value of Honey

Some time ago I ordered some of the Dr. Miller booklets on the food value of honey, and as I was giving them out the idea struck me that I should give each doctor I knew a copy of it. So I have been giving them out to the doctors I know, and some of them have asked for more to give out to their friends. I believe it is safe to say that I have sold 30 pounds of honey for each of these booklets given the doctors. When we give a doctor one of these papers, and he sees it is by Dr. Miller he reads it; while, if some honey producer got it up, he would pitch it into the waste basket.

Almost every month we see something in the bee journals about having healthier and happier children, by feeding them less sugar and more honey. How far do these articles go toward advertising honey? The beekeeper reads it, lays the journal up and forgets about it. If we can get a copy of this booklet into the hands of all family physicians and impress them with the food value of honey, the doctors will prescribe feeding honey to the children and the mothers will see that they get it.

It would be very easy to get these booklets distributed to every doctor in the U. S., if each beekeeper would send out a few to every doctor in his community. Beekeepers' associations could get a medical directory and use that for a mailing list. I also believe we should put some of these booklets in each school so the teacher may teach the children the value of honey. If we can get half a dozen of these booklets to each doctor and teacher, we will note a big difference in the sale of honey. J. W. Powell

Mesilla Park, N. M.

[Medical journals have shown an interest in honey in dietetics for some time, but the subject has not developed to any great extent. Recently, however, several articles of this nature have appeared in the medical journals, and investigators are now turning their attention to this subject. If the American people must first take honey as a medicine to find out how good it is as a food, let us hope that the doctors will prescribe it freely.—Editor.]

SIFTINGS

J. E. Crane

A LETTER was just received from H. E. Grey, Fort Edward, N. Y., inquiring what proportion of honey in water would be required to keep it from freezing when used in an automobile engine. I tried a mixture late last winter of 50 per cent honey; but our cold weather was nearly past, and the temperature went down to only 12° above zero, which it stood without freezing. Further experiments should be made, as a honey mixture is a stable mixture; while denatured alcohol, largely used for this purpose, evaporates rapidly, and one never knows just what the proportion is in his engine.

* * *

E. A. Kirkpatrick of Narberth, Pa., gives a very interesting account of a young man paying his expenses while in college by keeping bees. He may be interested in knowing that the present president of Pennsylvania State College helped himself through college in this way. This method not only helps pay expenses but gives a young man a business experience that is of almost as much value as his college training, and certainly is of great value as he goes out from college into the active duties of life.

* * *

The article by E. R. Root on bottling and selling honey, commencing on page 632, must prove of great value to beginners as well as some of us who have been longer in the business. One of the provoking things about bottling honey has been the scum, or what appeared to be scum, on top of our honey when we knew well enough there was no scum in it. He tells us it is only small air bubbles that make the trouble, and explains how to avoid causing these bubbles. Honey producers are to be congratulated that tin packages are coming more and more to be used for retailing honey.

* * *

"The Wintering Problem," as treated by Geo. S. Demuth, pages 636 to 639, is most satisfactory and is quite in harmony with my experience of the past 50 years. In only one or two things would I suggest anything farther. Where he suggests the use of shallow trays of insulating material for the top of single-packed hives, we use large bran burlap sacks and find them much more convenient to handle than the wooden trays we formerly used. Where he would unite all colonies deficient in bees, we have found such to winter very well if the brood-chamber is reduced to four or five combs and well packed. Of course, if one has colonies enough, it might be better to unite.

* * *

That interesting editorial, on page 631, makes automatic feeding look pretty good, but our experience with food chambers has not, so far, proved satisfactory in winter. I have talked with one or two others whose experience has been the same. It may work better in a milder climate.

* * *

On page 629, October Gleanings, an editorial mentions the trouble some have with the granulating of sugar syrup for feeding, some even saying that their syrup will granulate before it is taken from the feeders. Of course it will or may, if very heavy; but, after the bees have stored it, it is another story. The bees change it so as very largely, if not completely, to prevent granulation. If any one doubts this, let him take a sample of heavy syrup in a bottle and another of the same, after having been fed and stored by the bees in their combs, in another bottle, and note the difference. The sample that the bees have stored will remain liquid for a long time, while that which the bees have not touched will show granulation very quickly. So in feeding we make a syrup as heavy as the bees will take before it granulates. After they take it we do not worry, as the loss from granulation is very trifling.

* * *

There is a new wrinkle this year in feeding bees. Where little honey is gathered after the middle of July, there is usually much feeding to be done. We have for many years used a galvanized-iron tank holding about 800 pounds, but the pressure of so much weight of syrup and often of steam when taken to an outyard (for we heat to melt our sugar quickly) makes it difficult to keep it from leaking about the bottom or top. This year, not willing to trust our old tank longer, we have bought cans of five-gallon capacity, made of heavy galvanized iron, with a large opening at the top for filling and a nose for emptying. They have, we find, many advantages over one large tank. We can fill in half the time, and carry the cans right to the hives in the yard and empty into the feeders. With a 75-gallon tank it was necessary to fill the tank on the truck. Now we have the use of the truck so one may go to an outyard and gather up feeders while another is melting up syrup. A good-sized gate in a melting tank enables us to draw off hot syrup into 5-gallon cans without any dripping. There are other advantages I need not mention. These cans can be obtained of the Dover Stamping and Manufacturing Co., Cambridge, Mass.

OUR CALIFORNIA LETTER

CONSTANCE ROOT BOYDEN
(Stancy Puerden)

As usual, we Ohio-Californians have been experiencing the "very unusual" this September. Whether because of some law of averages or compensation or just to enable the weather to keep up its record for superlatives this year, the temperature on Sunday, Sept. 17, reached the highest point since 1913, just as last winter occurred the most disastrous freeze since 1913 and the most rain for years. The official thermometer in Los Angeles recorded a maximum of 102 degrees in the shade, that of Pasadena registered 108 degrees, and our west porch thermometer, unofficial but apparently reliable, showed 103 degrees. Our suburb lies between Pasadena and Los Angeles.

If this September is a fair sample I am afraid I shall have to admit that I love "My California" in spite of its September climate, not because of it, although today, Sept. 27, the thermometer is behaving beautifully, has not showed a temperature of more than 76, and the delightful sea breeze is mingling with mountain air, as it should. During those hot days the sea breeze apparently took a long detour across a desert before reaching us, with the result that opening a window was somewhat like opening a furnace door. It is a fact that a thermometer exposed to the breeze recorded a higher temperature than one sheltered from the breeze.

But while I never would advise anyone to visit California in September, or perhaps at any time during the fall, it is not a bad place in which to live. During even the warmest weather the temperature falls well down into the sixties before morning, with just enough exceptions to prove the rule. And on account of the cool nights the interior of the house preserves a surprising coolness until mid-afternoon, even on hot days, especially if most of the windows and doors are closed early in the morning. We always leave part of our windows open, for we are not fond of stale air, even if cool, but we have learned to keep out the hot breezes.

LAST month I believe I wrote that tomatoes and eastern varieties of grapes are not as fine here in California as in the East. I find I must retract. Just a few days after my manuscript had started east a nice beekeeper, living some 25 miles from here, sent us some tomatoes, and then a week or two later he did it again. I measured several and found them 14 inches in circumference; they were as uniform in size and shape as peas in a pod, had a most beautiful tomato-red complexion were firm and fine flavored and kept well. And the largest Concord grapes I ever saw, both as to size of individual grapes and bunches, have been on the market for some weeks. I am beginning to believe California-grown fruits, with the exception of grapefruit, are the finest in the world. Maybe in the future I shall have to retract making that exception of grapefruit; but, although we have enjoyed some very fair grapefruit from Arizona, I don't believe the California article can equal that grown in Florida as yet.

Someone has asked me to describe a nectarine. I should call it a white peach with an apple skin, or the skin might be likened to that of a plum. Those on our tree were delicious, juicy, refreshing, very sweet and with a flavor a little more delicate than the average peach. The skin was apple-green or pale yellow when ripe, and some of them had dark red on one side. We liked them sliced without peeling, and we also used them sliced over such breakfast foods as shredded wheat. Whether they can be successfully grown in the East I do not know, but I remember father had one in our yard when I was a girl. Possibly it did not survive the winters, for I do not think it lived to be a very large tree.

Did you ever hear of roselle buds? They are perhaps a little over an inch long, half an inch in diameter, are striped bright red and green and they grow on shrubs or bushes. A very pretty ruby-red jelly can be made from them, and the flavor is much like that made from currants. They must be very rich in pectin, for the juice jellies very quickly with little boiling.

Speaking of pectin reminds me of the commercial pectin, sold under the name of Certo. I have used it in making jams and marmalades this summer and have tested it in apricot jam made with honey instead of sugar. That made with honey jellied more slowly than when sugar was used, perhaps because the honey added a little more liquid, but it finally became firm. The Certo is a great convenience when making jam of fruits deficient in pectin, such as peaches, and it also enables one to use canned fruits for making jam during the winter. The use of it with strawberries, blackberries and raspberries results in a much finer-flavored jam than usual, as it obviates the necessity for the long boiling which injures the flavor and hardens the seeds.

But for making jelly with roselle buds, grapes, quinces or other fruits rich in pectin I prefer not to use the Certo, and I also think orange marmalade is better without the Certo, as oranges and lemons are rich in pectin. The Certo recipes call for so much sugar that jams made by that method are apt to taste too sweet unless some lemon juice is added.

THE fifteenth birthday anniversary of the only daughter of our family fell on August 30, and as that is also the anniversary of her parents' engagement it seemed fitting that it should be observed by a holiday, although we had some difficulty in persuading the busy man to see it that way. However he did consent to join us if we would let him go down to his office in the city for a few hours, and therefore ten o'clock in the morning found the two Boyden families assembled in Pasadena to take the auto stage, which makes a daily trip up Mt. Wilson. None of the eight who made up the picnic party had been up this particular mountain although at least one of them never looked at the peak, with its gleaming white sun tower belonging to the observatory, that she did not wish she could be there.

Mountains are so full of mystery and illusion. For instance, from our home that white sun tower appears to be at a little distance to the west of a peak rising considerably higher. But we had long noticed that, as we drove to the east, say to Arcadia, the sun tower appeared to be just as far to the east of that peak, and for a time we thought there must be two such towers. Then someone explained that the sun tower is on the highest point, and that the other peak, being between us and the sun tower, appeared higher for that reason.

In previous articles I have alluded to the mountains appearing like a long, high ridge to the north serrated with higher peaks and then, when the lights and shadows are just right or snow picks out the higher peaks, one can see, instead of a ridge, many ridges and peaks, the higher peeping over the lower ones, probably separated by deep canyons and gorges. But when we drive close to the foot of the mountains in the effort to penetrate their mystery the near-by lower ridges hide the distant peaks so we can see less than when we are at a distance.

As the ascent of Mt. Wilson is made by auto stage on the toll road (unless one has strength enough to make the climb on foot) it seemed to me, if we watched closely, we would know all about the shape of the great tilted-up mass of earth which is known as Mt. Wilson. But now I am hoping a future airplane ride will reveal what the drive did not, for Mt. Wilson is still a beautiful mystery to me, and so are Mt. Lowe and Tamalpais. although I have been up both of them.

After leaving the tollhouse the road dips down into a canyon, crosses it on a bridge and then starts up the narrow trail which can be traced for some distance from the valley below. On and up we climbed steadily, curving into unsuspected canyons and clinging to their steep sides, curving out again where we had fascinating glimpses of the valley far below, making frequent "hairpin turns" where a little carelessness on the part of the driver would have shot us off the narrow road into space. These mountain drives always seem to me more dangerous than airplane rides, for automobiles cannot volplane down if they miss the trail, but I believe accidents are extremely rare. There were places where we could see a section of our own road high above us and perhaps two more sections away below, which we had just traversed.

The nine-mile drive from the tollhouse to the peak is filled with beauty. As we climbed higher the features of the valley below showed only faintly through a violet light, although the day had given promise of being clear. The views of distant mountains were magnificent, the trees and shrubs in the canyons and on the mountain slopes were surprisingly green for the season, and although there were not many shrubs in bloom there were a few which were very fine, many covered with little creamy plumes, like tiny pampas plumes.

We ate our birthday picnic luncheon in a little summerhouse in a quiet grove, which looked quite like an ordinary resort with its little hotel and scattered, tiny cottages for the hotel guests. One might forget that he was on a mountain peak unless he glanced down through the trees and saw the broad San Gabriel Valley spread out over a mile below (6000 feet). Don't laugh at my enthusiasm, you readers who may live near some of the high peaks of the Sierra Nevada or the Rockies. Remember our mountains here rise almost from the sea, and they are satisfyingly high to ex-Ohio eyes.

The temperature on Mt. Wilson averages much lower than the valley, but we seem to carry superlatives with us, for that was the hottest day of the year on the peak up to that time, 88 degrees. But it was altogether delightful. Out on Echo Rock, with the mountain sloping steeply away in three directions to blue depths which made one dizzy, while Mt. San Antonio (10,000 feet) and its neighboring peaks stood out clearly and deceptively close to the east, a wonderful, cool air rose from the canyon depths, air with a woodsy fragrance.

Of course we went through the museum and enjoyed the pictures taken through the great telescope, and later we were conducted through the observatory in which is the mammoth reflecting telescope, the greatest in the world. We also learned that a professor from Northwestern University has been conducting a series of experiments reflecting light from Mt. Wilson to Mt. San Antonio ("Baldy") to revise figures on the velocity of light waves, and by the end of another summer it is hoped some interesting results may be made public.

But life doesn't permit us to stay long on mountain peaks, either figuratively or literally, and so the time for descending came all too quickly, especially for the nineteen year-old boy who numbers astronomy among his hobbies and who lingered in the observatory up to the last second. And the fifteen-year-old young lady thinks her mountain peak birthday picnic was the finest celebration she has had yet.

Beekeeping as a Side Line

Grace Allen

THE State Fair was in progress. In the honey section at the north end of the Agriculture Building, hundreds of bottles of rich amber honey stood in rows against the white-covered windows behind. Extractors and hives and uncapping knives told the mysterious story to the great public who do not know. Through their glass sides the observation hives showed bees, three-band Italians or bright five-band Goldens. Ribbons had been awarded—blue ones hung proudly, red ones contentedly, yellow ones quietly; on extracted honey, comb honey, granulated honey, beeswax, honey vinegar, empty brood-combs, the bees themselves and the general grand display.

The crowds surged by. Their questions, perennially funny, about queens and artificial comb and if the bees were making honey, were interspersed with such queries as, Where is the cow made of butter, where are the decorated cakes, where is the apple exhibit? Visiting beekeepers kept turning up at the honey exhibits, always to be welcomed with a quick warm handclasp—here is one of us. Then how the conversation drifted on and on into the things that matter—to a beekeeper: how short the crop was this year—and why—too much rain, with one—not enough, with another—clover killed out by last year's drought; what about foul-broody section honey sweeping in here from the west, with the smeary wooden discard being thrown cheerfully into the alleys because it is summer and there is no fire to burn it and neither the chickens nor the pig nor the family cow will eat it?—well, some day something will be done about shipping out section honey from foul brood territory; what you getting for five-pound buckets?—or what's the prospect for aster?—coming fine—too dry to yield—why, Man, don't you know it rained Wednesday?—ask the Fair management, they know, or the church women running the eating booths, they know—well, here's hoping, my hives are mighty light now—my yard's already beginning to smell sour. And so on and on, all the loved old familiar beesy talk from beeman to beeman (speaking in generalities).

Then one afternoon, Friday it was, have you seen the live bee demonstration, asked Hardin Foster, the young queen-breeder from Columbia. Mr. Foster had been around before, and the conversation had been appropriately flavored with bees and queens. But this was something new. Live bee demonstration? No, we didn't know there was one. Where is it? In one of the sideshows, I've been told, he answered.

So we went to look it up, three of us. In one of the sideshows. Which one, we wondered, and who was putting it on and what would it be like? Out into the strange medley that constitutes the sideshow feature of a state fair we wandered, past the Dodgem and the Whip and the Ferris Wheel and the Merry-go-round and the House of Mirth and the Joy Trail and the Old Mill and the Diving Belles; just where in such a conglomeration would one find a live been demonstration? Finally we reached a long tent affair; freaks, said the Man-of-the-Party, it won't be here, but I better ask. Right here, quoth the ticket seller, who promptly had our sixty cents and we were inside.

A dusky-skinned man was swallowing fire and sending it back out. That was the first thing we saw. The little crowd of sideshow devotees was there in front of this fire-eater. But lo, at the far end of the line, in a wire cage, was a small hive of bees and a very normal-looking gentleman writing a letter! Nothing freaky there, thank goodness, we remarked, starting joyfully in that direction. But the pleasant-looking fat man shooed us back. The show goes the other way. he explained gently; and we, feeling it proper to do as they wished, meekly watched the dusky-skinned man swallow more fire. Then came a misshapen little dwarf, but this we dodged, by simply chatting without watching. We have never liked freaks. So I don't know what this one did, nor the next one nor the next. But at last the announcer was calling out that, Now, ladies and gentlemen, Dr. Wood will show you his famous—and we knew. with a little thrill, that there we were, right in front of the cage, and the show was starting. It lasted only a few minutes: first, a little talk on bees, such things as the three kinds and how many eggs the queen lays; then he jarred the bees off a frame into a specially contrived hat, and, making appropriately genial remarks, he donned the hat. Now you see, he said—inevitably—I have bees in my bonnet. He removed the hat. One or two bees remained on his bald head. Went over the top, didn't they? he observed, brushing them off. Now, he went on, I am going to play ball with these bees—want to play with me?—addressing a small boy who promptly shrank back from the cage, shaking his head. Deftly slipping a stiff card under the bees, where he had emptied the hat out, he threw them into one hand, tossed them, decreasing in numbers, from one hand to the other; and the demonstration was over.

We had decided not to show that we knew anything about bees, but to ask some questions and see how they were answered. But somehow we couldn't think of anything to ask. The Man-of-the-Party finally made a brave effort; the demonstrator answered. Then, seeing us still standing there, while the rest of the crowd had moved on in the direction of—the fat man was next, I believe—he regarded us a moment with interest, then began, there's a woman in Nashville—and hesitated. Who?—what about her? the Man-of-the-Party helped out. Then the live-bee-man said three things, one after the other: first, my name; then, You?—in a swift interrogation; and then, I'm coming right around there. And I'm coming right around there! I answered, and we met by the door. It was like meeting an old friend. Indeed, it was that, really. Gleanings doth make friends of us all.

I was just writing my wife, he said, waving towards the writing materials set aside when his act was called—and telling her I had found your exhibit this morning but couldn't find you, and guessed I wouldn't see you.

I said we hadn't known of the show more than half an hour. And he said he hadn't been there till Wednesday, having been in Coney Island. That was the beginning. We talked on and on. How strange it seemed, thus being chummy with one of the performers in a sideshow. But we were all bee lovers, and therefore friends. Of course, Mr. Woods had met E. R. Root—unhappy the beekeeper who has not! He told us about it—it was while he was with Ringling Brothers—Mr. Wood, I mean, not Mr. Root! I invited him to eat dinner with me under the tent, but he had to join some friends, he reminisced regretfully. He took us around behind, opened a flap at the back and showed us his other small hive sitting on top of one of the big carnival wagons, the bees flying in and out. By using them alternately, he keeps them in good condition.

Of course I asked his story, and he gave me pictures. But the story begins away back when he was seven or eight years old. His father, following the olden custom, had sulphured his bees to get the honey. The boy actually cried. When I get big, he declared, I aint goin' to kill the bees to get the honey.

It was only two or three years later that a catalog came to his father showing hives with movable frames. Promptly his father bought one for the boy; and he has been interested in bees ever since.

His start in the exhibition business was made about 20 years ago, and happened this way. He had 28 or 30 colonies to transfer from old-style hives to new ones. Excessive robbing was making it a mean job. So he built a wire cage and did the transferring within. Then it became easy, became pleasant. He began playing with the bees, doing certain stunts and little tricks again and again. He was delighted with the ease of it all.

I'm going to do this at the County Fair, he told his wife exultantly, it'll make folks open their eyes. He went to the see the secretary of the Fair. Yes indeed, said that gentleman, come on. He went on and met with great success.

One day, there at the little county fair in Pennsylvania, a showman saw him perform, and later hunted him up. I have a string of 20 or 30 fairs, he told him; let me take you on. It's a matter of money, answered Mr. Wood, wisely. I've got it, said the showman. I'll bring my wife tomorrow, said Mr. Wood, wisely, again. They met, they agreed; he started out and is still going. That was more than 20 years ago. Since that talk with the showman back at the Monroe County Fair, he has been all over these United States and into Canada and Mexico. He has shown in Madison Square, New York. Is there anything more to aspire to in the showing line? He hopes his son will continue with the work when he is through. He would rather give his talks and exhibitions before schools and Y. M. C. A.'s, but, as he told the showman years ago, it's a question of money. Perhaps, he says, when the little home is paid for and the children all grown and educated, he will stop going around with shows; there's money in it, but he wants to get home, settle down by his own vine and fig tree and beeyard, and enjoy life, back in Pennsylvania. Or he might go to lower Louisiana and build a houseboat, and float his bees up and down the Mississippi. What dreamers we all are!

Now, ladies and gentlemen, Dr. Wood, the famous King of Bees, will give you— They had gone the rounds again and it was his turn once more! Once more we listened and watched. Once more he joined us outside. I can't give anywhere near all my show, he complained, they give me so little time. But I'm glad I haven't sealed the letter to my wife. I'm going to tell her about seeing you. And we parted.

Are we not all alike, we beekeepers?—lovers of bees, friends of all other beekeepers, and sharing everything with our wives—or, some of us, with our husbands.

November Memories.

Softly down the dim west end
of one November day
Came a lonely birdnote floating
through the silent gray—
Across the fields the calling children
sounded far away.

Bees, no longer questing forth,
rested in the hive.
Rested? Ah, the loyalties
that keep their dreams alive!
On I wandered, wondering—
may all dreams survive?

(Aye, so they be questing dreams,
rapturous and fair!
Aye, so they be beauty-fed,
fanned by wings that care!
Aye, so wings beat loyally
through dark hours or fair!)

No one saw the night come;
something grew more deep—
Day was dusk and dusk was dark
and dark put earth to sleep.
But I, who walked the roads alone,
have memories to keep.

FROM NORTH, EAST, WEST AND SOUTH

In Southern California.—The condition of bees throughout southern California is above normal in amount of stores and freedom from disease. It is always much easier to treat disease in our prosperous seasons, and bees that go into winter with the hives full of honey are less likely to develop disease. We find that the weak, half-starved colonies, that barely get through the winter, are the ones to look out for, so far as disease is concerned.

With the higher class of beekeeping practiced today, the apiarist exercises more skill and care in both the prevention and cure of disease than the old-style beekeeper did. He also has more of that "come-back" ability, as we express it here in the West—that is, he can, in a short time, clean up any disease that might appear, provided the season is at all favorable. He can also increase his colonies rapidly enough to replace any that might have been lost by disease or otherwise.

One of the most unfortunate situations that still remains in too many cases here in the West is the fact that the beekeeper—just as soon as his honey crop is disposed of—turns his attention to other lines, thus neglecting his bees. In some cases no attention is given them until the following spring. This not only leads to a great loss of combs in the colonies that die out from various causes but also gives every chance for disease to be spread among many colonies if any diseased combs are robbed.

The summer weather continued longer than usual in southern California this year, and September proved to be one of the warmest on record. Where there were bloom and moisture, the bees filled their hives well, and most apiaries are in fine condition for winter. Blue curl is very abundant this year, and while it has perhaps yielded more nectar in other years, still the bees have done and are doing well on it. The great profusion of plants makes up in a great measure for any shortage of nectar secretion that there might be.

The market seems to be able to take honey at a certain price, and buyers are shipping right along. We shipped some 200 cases of orange honey last week that the buyer told us was going to Belgium. The market on sage honey seems weaker, and buyers do not seem nearly so anxious to buy it as they do the orange or even the darker grades.

Six, seven, eight and nine cents seem to be about the prices offered. A few of the larger producers are holding, but most of the beekeepers are selling or are willing to sell.

To make the business gain us a living at these prices, one must be conservative and run his affairs just as economically as possible. Supplies of all kinds, as well as labor, are much higher than when we sold honey at the above-quoted prices before the war.

Honey plants are going into the early winter in excellent condition. A good growth was made during the summer, and, with a normal amount of rainfall this winter, all should be in good condition for next season.

L. L. Andrews.

Corona, Calif.

* * *

In Northern California.—The year 1922 will go on on record as a very poor one. Excepting in the very northern part of the state, hardly any section gave a respectable surplus. Alfalfa was especially disappointing, and in some of the very best alfalfa locations of the San Joaquin Valley there was actually no surplus this season. The fall plants, jackass clover, alkali weed and blue curls in the valleys, are secreting, and during September in some localities there was extracting. Owing to the scarcity of alfalfa honey most colonies were not in a fit condition to reap the benefits of the late honey flow. Along the coast sections, the fall bloom was exceedingly barren of nectar. The wild buckwheat, just as L. L. Andrews pointed out in September "Gleanings," bloomed with us also very profusely, but was altogether lacking in nectar. The same holds true for blue curls.

Between six and seven cents has been the ruling price for light-amber honeys. The demand for honey was much more active a year ago at this time. It is expected, however, among beekeepers and dealers alike, that the market will become firmer and more active within a month or two.

Along the coast counties the yellow-jackets have become an intolerable nuisance. Many of the weaker colonies have been destroyed outright. In some instances colonies with entrances confined to a single bee-space have been overcome, so persistent has been the attack of these marauders. They are so numerous in some sections that it is possible to trap as many as 100 and 200 pounds of these insects about an apiary or honey-house.

Ever since Prof. W. B. Hermes has been in charge of the entomological department of the University of California he has had no easy task in fulfilling the demands made upon him by our rank and file. Our state institution has been hard pressed for funds, which fact has been Prof. Hermes' greatest handicap. As has been announced, Dr. George R. Vansell, formerly of the Universities of Kansas and Harvard, is now a member of our University staff and is in charge of beekeeping at the University Farm at Davis. This is most gratifying news. All of us have realized the need for beekeeping instruction at the Farm. Dr. Vansell has been inspector of apiaries in Kansas and has also been connected with apicultural work in the U. S. Department of Agriculture. His first work is building up an apiary of 50 or more colonies, and students, after having received a certain amount of fundamental work at the university at Berkeley, are then in a position to gain adequate practical instruction at Davis. Ralph de Ong has charge of the beekeeping work at Berkeley. M. C. Richter.

Big Sur, Calif.

* * *

In British Columbia.—In spite of a dry summer and the smoke from numerous forest fires, that veiled the sun and obscured the landscape for quite long periods in many districts and prevented the bees from flying freely, there has been an excellent honey crop in British Columbia this season. In the Fraser Valley, stretching from Vancouver to beyond Chilliwack, a distance of 60 or 70 miles, there has been a much heavier yield than in the other parts of the province.

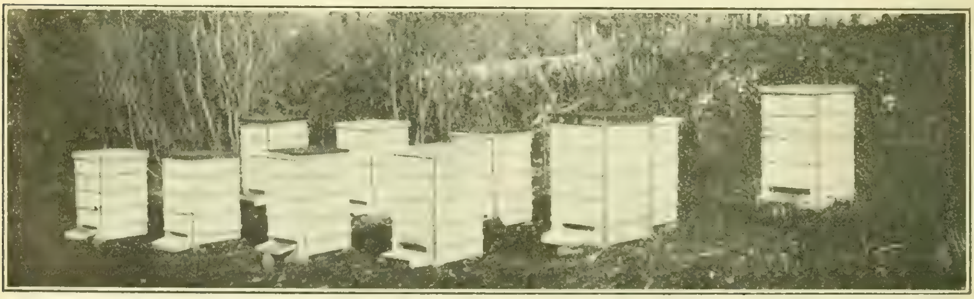
Four years ago it was hard to find an apiary in this valley that was free from European foul brood. The introduction of Italian bees to replace the blacks, which were then so common, together with improved equipment and better methods of beekeeping, has worked wonders in a short time in eradicating the disease and increasing the crop.

Fifteen Government demonstration apiaries, under the supervision of the apiary inspectors, were established at different points in this territory for educational purposes, and the wisdom of adopting this course has become very apparent in the good results that have been achieved. The average production of the hives under supervision in these demonstration apiaries this season will be about 300 pounds of surplus honey from each. Two hives in two of the apiaries have exceeded the 600-pound mark. One of these produced 660 pounds and the other 630 pounds, enough honey being left in both for winter stores.

A permanently packed outer case is used in all the demonstration apiaries that have been established in the province, which now total 40. It is proposed to add to this number as soon as the necessary arrangements can be made, so that in course of time the whole province will be covered. The queens, the stipulation being that they should be young queens, are allowed a breeding space of 20 Langstroth frames. It has been found that the outer case, although an additional expense to start with, very soon saves its cost in the extra amount of honey obtained. Colonies so protected winter better and build up much quicker in the spring. There is also less trouble from swarming, as a more even temperature is maintained within the hive. Comb honey can also be more easily produced.

In the Fraser Valley there is usually an early spring flow, mainly from dandelions and the broad-leaved and the red-flowered maples, from which surplus honey is obtained. This is followed by alsike and white clovers, and raspberries, which are grown commercially in many localities, and later by fireweed. The latter grows luxuriantly in most places and yields nectar very freely. In the dry belt of the interior, including the Okanagan Valley, where there is sufficient irrigation, good crops of honey can be depended on from alfalfa, hairy vetch, sweet clover, etc. In the eastern portion of the province, adjoining the Alberta boundary, where the natural precipitation is greater, averaging about 28 inches per annum, there is a wider range of nectar-bearing plants than in the dry belt, such as fireweed and the spreading dogbane (Apocynum androsaemifolium). The latter yields a water-white honey, similar in appearance to fireweed, but with a better flavor.

Nelson, B. C. W. J. Sheppard.



A Government Demonstration Apiary in British Columbia. These are standard ten-frame hives all in permanently packed outer cases. Note that, as supers are tiered up, rims are added to the outer case.

FROM NORTH, EAST, WEST AND SOUTH

In Northern Michigan. The reports from northern Michigan this season vary considerably, due both to local weather conditions and to the honey plants, the latter of which the great diversity of the soil materially affects.

A very rapid honey flow started early in June from a source not generally known for a certainty. I must admit my ignorance in the matter, although I have tried to ascertain the source. The honey is light amber and somewhat strong. The source in the past has been attributed to the water-maple, often called swamp or spotted maple, but this has been pretty well cut away. Mr. Chapman of Mancelona claims it to be the beech tree bloom. I watched the beech trees this year but saw no bees, although they were heavy with bloom and we have a large crop of beechnuts this fall.

The raspberry bloom was in and out almost before it was realized; then the milkweed plants, which we depend upon for one half the surplus, was affected by drouth so that only in very favorable localities did it yield more than one-third its quota. The buckwheat areas were spotted—some localities getting none, others a plenty—but the yield was light. The sweet clover is going to play an important part in our honey crop in the future. For the past two seasons it has been sown in large quantities, and even during this season in some sections considerable honey was stored from this source.

Generally speaking, Michigan honey is dark this season. Even in the white clover section of "The Thumb," David Running reports it unusually dark, but the flavor and body are good.

A year ago nearly every beekeeper pailed up his honey and started to sell it locally. Competition was strong. This season several large producers have sold to jobbers. Some have shipped their honey to city markets and will pail and sell it there, while others are selling locally as usual.

All old honey has been cleaned up nicely, and the new honey should start off well. Early sales were not good, due to a superabundance of fruits of all kinds and warm weather. Remember the price set for honey now controls the price for the season. It's a long time till next July, and the consumption of sweets has only just nicely started.

Colonies bred up strong on the light fall honey flow, but were practically destitute for winter stores and required heavy feeding. Those who have not given the bees feed will report heavy losses next spring. I fed 4,400 pounds of sugar to 350 colonies, run for extracted honey. The comb-honey colonies required no feed.

Many forget or neglect to contract the entrances during fall and winter. This is all wrong—a wide entrance allows the air to circulate around the combs, while a small entrance prevents the movement of the air. Don't forget that windbreak this winter; it's more than half the winter protection.

Plenty of bees, stores and protection spell successful wintering. Take away any one of the three requisites, and it spells failure. Old combs and wax cappings should be rendered out now. Remember how delayed that foundation was last spring, due to not getting off the wax early enough.

East Jordan, Mich. Ira D. Bartlett.

* * *

In Wisconsin.—Honey is moving fairly well. The worst part in connection with the honey movement is a lack of uniformity in prices. A few beekeepers act independently of all others and are retailing at wholesale prices, and some of these sell for the same price to the consumer as they do to the stores. Another class of honey producers are those who have gotten into the game recently and have no established trade; some of these are cutting prices, as they want to unload fast. This has a bad effect on the honey movement as a whole. The worst part about it is that, if the rest of us also lowered our prices, the other fellow would sell for still less again. The end might be fewer beekeepers, less bees and less honey in the future.

Too much has been said in the past about beekeeping being the very best paying branch of any agricultural work. It is misleading, when tin smiths, carpenters, masons and other skilled laborers are being paid around one dollar an hour just for the skilled labor performed. Surely it requires skilled labor to keep bees, and keep enough of them so that the proceeds will pay the price of skilled labor plus all the other expenses. Yes, we should have more than that, we think, because we are obliged to take bees' stings though we may bear the pain and smile (?). We are also obliged to wear extra clothing and a veil in the hottest weather. Surely this ought to be worth more than other skilled labor. We are very sure that our health in general suffers from bee-sting poison. Surely it requires extra time and energy for our bodies to throw off this extra amount of poison in connection with the regular amount of other body poisons. Those who are big, strong and hardy may laugh at this, but suppose one needs an extra hour of sleep or rest to throw off this poison. We think this time might well be charged up against the bees and honey. We must find ways and means to lower the cost of producing honey, or we shall be working for little or no pay.

Normal colonies are in normal condition here. In our own yards very little requeening was done, and such colonies are not so strong in young bees as they ought to be.

We expect some loss from such colonies. We meet such possible losses with our reserves, as we call them; that is, extra increase in the fall with young queens and enough bees to winter in the cellar. These we expect to use in the spring where queens are missing or failing.

Greenville, Wis. Edw. Hassinger, Jr.

* * *

In Montana.—Montana has had the poorest honey crop in its history. Final reports from the different districts in the state indicate that not over a third of a crop will be harvested this year. Numerous reasons are given for the failure, a very small growth of sweet clover, as compared with the usual, probably being one of the largest factors. The thrip, a small insect found in the blossoms of both alfalfa and sweet clover, as well as a very late spring, probably had some effect. Practically the only honey flow which Montana producers had was one in the early part of July when some surplus was gathered. The honey produced is up to the Montana standard of quality.

The beekeeping industry of the state was well represented at both the Billings and Helena fairs by large exhibits of bee products and supplies. Free honey recipe leaflets were distributed by B. F. Smith, Jr., of Fromberg and R. A. Bray of Big Timber. Doubtless a great deal of good was accomplished.

The beekeeping course instituted last year at the Montana State College of Agriculture, with Professor O. A. Sipple in charge, is well under way, and a great deal of interest is being taken in the work. It is planned to hold a large state beekeepers' meeting at the college some time during the winter months.

Judging from the large first-year growth of sweet clover, Montana beekeepers can look forward to a banner season next year.

Big Timber, Mont. R. A. Bray.

* * *

In Idaho.—After a recent trip, covering about 200 miles, among the beekeepers of western Idaho and eastern Oregon, I encountered no one who had taken a large crop. In a few districts, the alfalfa weevil reduced the crop 50, 75 to perhaps 90 per cent; while in other districts, though the weevil prevented the first crop of alfalfa from producing nectar, the second flow was fairly good. In some places where last year the crop was nearly a failure from weevil depredations, this year a fair crop was taken. Where spraying is resorted to, for weevil control, there seems to be such a destruction of minor parasites, such as the thrips, that not only is more hay harvested, but the bloom appears better and probably produces more nectar. In addition to this, the best control methods include the early cutting of the first crop of alfalfa, which brings the later crops on somewhat earlier.

There has been quite a general tendency to try more or less migratory beekeeping, and some have made it pay; but in some cases, the weevil districts from which bees have been moved, have later yielded quite a honey flow.

A few in orchard districts have suffered loss from spray poison. There has been but little increase made, and over much of the territory there was but little swarming. One producer is testing out Carniolan and Caucasian blood, in an effort to secure more increase, his range being understocked, but to little avail.

Regardless of prices quoted to buyers, nearly all reply that we are one or two cents too high, but there seems to be a general feeling of confidence that, a little later, honey will sell at something like a fair price, though, with the high cost of production prevailing since the war, we are not at all sure that that price will yield a profit to the producer.

All the extensive producers visited, so far as I remember, now use central extracting-plants, equipped with power extractors and steam-heated uncapping knives.

The crop this season consists almost entirely of extracted honey, there being but a very few producers shipping a carload or more of comb honey. The quality is generally excellent, probably being fully equal to the best that has been shipped from this region. E. F. Atwater.

Meridian, Ida.

* * *

In Pennsylvania.—The fall honey flow in Pennsylvania has been as disappointing as the early flows were. A record-breaking drouth dried up vegetation. In some favored spots goldenrod and asters provided sufficient winter stores of poor quality. In central and southern counties most beekeepers have harvested no surplus and are now feeding sugar to provide winter food.

A great lack of young bees for the winter cluster has resulted because of poor breeding conditions. In this respect young queens of midsummer rearing have shown up decidedly better, by laying more eggs and keeping it up later and under bad conditions, than have older queens. Italian queens surpass black or mixed queens in this respect. At this writing (October 6) many young Italian queens are still laying some eggs, while even young mixed queens ceased egg-production some time ago.

The control of American foul brood is the problem most important in many locations. Some of the county beekeepers' associations are making this the subject for special attention. By adopting methods that will interest the careless beekeeper and getting him to join the association they are accomplishing a great thing. The Allegheny association deserves especial mention in this respect. They have the county divided into districts, with a member supervisor over each district. Frequent meetings and demonstrations are held by districts under the management of the supervisor. He also endeavors to interest the beekeeper in such matters as disease control, better equipment and better stock. By this means they have secured the membership of most of the beekeepers of the county. When a man is in the association he is more likely to be a better beeman than if outside. The Allegheny County membership is now about 180. Several county associations are preparing for the same kind of work. There are now 22 county associations in Pennsylvania, all very much alive, and a big state association.

Prof. N. E. Phillips, who will succeed me as extension apiculturist at State College, is a well-trained man and highly capable of doing greater things for this field. He deserves the heartiest co-operation of every beekeeper in the state.

The plan for a beekeeping course and research in beekeeping, with adequate buildings at State College, is meeting with the hearty approval of the beekeepers. As soon as election is over every state legislator should be flooded with information about beekeeping and reasons why appropriations for this work in Pennsylvania should be made. Geo. H. Rea.

Reynoldsville, Pa.

* * *

In Southern Indiana.—In the last letter, I mentioned the great promise from sweet clover. I moved 24 colonies down into the heart of the sweet clover district. There was something like 300 acres of as fine-looking sweet clover as one could ever wish to see. To all appearances the weather was ideal for the secretion of nectar. It was warm, the thermometer ranging between 80 and 90 degrees. An occasional shower kept the ground moist. The bees went to work with a will, storing honey in four or five supers each. All went merrily until, after they had been storing for only about one week, the honey flow stopped as suddenly as it had begun. Instead of the two or three hundred-pound average that was expected, about 75 pounds were received.

I should like to know if sweet clover acts this way in other localities and if any reason can be assigned for it. The land is sour in this locality, and white clover seldom yields. Sweet clover has been planted in quantities in this locality for only about five years. The honey flow has usually been heavy but very short, much like it was this season. In previous years the weather has been hot and dry and the curtailment of the flow has been attributed to the drouth; but, this year, it was shorter than ever although the weather seemed ideal.

Mr. Brevoort, a large landowner, has a unique and a very excellent manner of utilizing sweet clover to keep up the fertility of the soil. He drills in winter wheat in the regular way in the fall. Early in the spring he sows sweet clover over the wheat fields by merely broadcasting the seed on top of the ground. After the wheat is out in June the clover covers the ground. The next year it comes on with a rush and can be plowed under and the ground put into corn. In this way no time is lost, and a sweet clover crop is grown, a crop being harvested every year. Sometimes the clover is allowed to mature a seed crop and the land again put into wheat. Does this pay? Well, if you could see the enormous crops that are raised on the land thus treated, the question would be answered.

In early July the weather turned hot and dry. The blue vine gave a small flow, but the main crop, smartweed, was cut short on account of the dry weather. The drouth continues up to this writing, October 5. It has been so dry that no flow from asters and goldenrod seemed possible; yet, strange to say, we are having a nice stimulative flow from both. In fact this is the first year I am sure that bees are gathering anything from goldenrod. Although the acreage of this plant is small, enough nectar is coming in so that it shakes from the combs, and the large amount of golden pollen carried in by the bees furnishes additional proof. Therefore, as regards the influence that the weather has on nectar secretion, we are not exactly like the Dutchman, "The longer ve liff the less ve find, by jimminy, out."

Vincennes, Ind. Jay Smith.

* * *

In Kansas and Missouri.— Bees in this section, on the line of eastern Kansas and western Missouri, have done very well during the season just closing. There are probably 2500 colonies scattering in, through and around the twin cities of Kansas City, Mo., and Kansas City, Kan., many of which have produced more than five supers of extracted honey (250 pounds). There has been an almost continual honey flow ever since the fruit bloom started, which furnished considerable surplus up to the present time (Oct. 1). Dandelion is one of our mainstays for spring. White clover gave a fine yield this year, followed by a good honey flow of sweet clover, which lasted until nearly Sept. 1. Fine rains last month have started vegetation to growing, and some of the lawns at this writing look like springtime with their covering of late dandelion and white clover. Heartsease is yielding fine, as well as some alfalfa. Asters are being worked, and the bees are still getting something from the late sunflowers and a lot of other late fall flowers. While we had hoped for some surplus from the fall flowers, I doubt if we get it. However, the honey flow on now is very beneficial, as it has started the queens to laying, and there will be an abundance of late emerged bees to go into winter quarters. Some of the hives have as much as five or six frames nearly filled with brood, while the rest of the brood-chamber is being filled with the late nectar.

Most of the crop of honey produced here is extracted, selling for 35 to 50c for a pint jar. Some produce in shallow frames, getting one dollar a frame, and many produce in the tall section on the old-fashioned Baldwin hive (American frame, nine to the brood-chamber). This style of hive, however, is passing out, and being replaced with standard equipment, as the owners of Baldwin hives find it difficult to dispose of their equipment when they want to sell. Roadside selling is a great help in disposing of the local production, but does not nearly supply the demand. New York honey is sold here as well as honey from Los Angeles, Cal. There is one producer here who has built up a very nice business supplying the grocers with comb honey in double-tier cases. He has removed the entire front of the case, replacing it with a one-piece section of glass, which he has neatly secured around the edges of the case with heavy gummed paper in strips that the grocers use to bind packages. This exposes all six sections to the best advantage, and when placed on a piece of mirror makes it look like two cases of sections.

The problem of wintering is met in many different ways here. Some winter on the summer stands, with empty supers on top. Others pack in winter cases. Some use the Buckeye hive with 100% success, others pack with 12 inches of straw in the back and sides, leaving the fronts exposed but fill the super with straw, and provide a windbreak with fine success. One producer in Fort Scott, Kan., winters his bees in the cellar with 100% success. He is from Illinois. Many are learning to supply ample stores in the fall for winter and spring. A live association has been started here, the Heart of America Beekeepers, and an election of officers will be held at the next meeting in October. Live topics are discussed. and speakers well up in beekeeping are eagerly listened to. Much good is being accomplished in better beekeeping and methods of eradicating disease. A good program is being arranged for the next meeting.

Kansas City, Mo. James B. Drury.

In Ontario.—The latter part of September here in Ontario was unusually warm and very dry for the time of year. This made the job of taking off the buckwheat honey crop a much easier one than in some years, since the extractor worked more nicely than in cool weather. On the other hand, it meant careful work at the apiaries to avoid robbing. In placing supers above escape-boards, it was remarkable how the bees could find some little opening that we would sometimes fail to see. However, buckwheat honey was cheap; and as there is no disease at any of the yards where we used escapes, no particular worry was occasioned by the fact that we had about half a dozen supers robbed out, among about 1000 that were escaped.

This reminds me of a note in October Gleanings from Morley Pettit, in which he states that when they wish to feed for winter, they place the supers above the escapes, and then the following day take food to the yard, and at the same operation or at the same time they remove the supers and haul them home on the return trip. I fear he would not have been able to do that in our York County apiaries during the last two weeks in September. Our bees will not clear out of the supers in 24 hours in the fall season. We have about 600 bee-escapes, and in the lot all kinds are represented that I know off, including the Porter and other well-known escapes, and also several in which the cone principle is used. No matter what kind was used, the bees were from two to three days leaving the supers this fall, while in the clover honey flow they were generally out if left over night. As to loading up honey and feeding in the yard at the same time, there would have been ''something doing'' in our yards this fall if we had tried it; for, as despatches used to say during the late war, there was a ''certain liveliness'' apparent when we loaded up with honey during that warm weather, no matter how careful we were and no matter how fast we worked. During the hottest weather when we were removing the buckwheat honey, the boys by choice several times left home before daylight and got their load from the apiary before the bees were stirring much, and then got another load late in the evening. It was quite possible to get a load any time, but much more pleasant to be there early and late.

Owing to so much work in getting off the late crop, feeding with us is later than usual, and at this date (Oct. 10) we have just nicely started. However, with the feeders on hand, we can soon feed a good many tons if necessary, so we are not worrying.

While I am at it, I might as well state that I find things much different in another matter of practice than friend Pettit does.

I refer to the matter of requeening, in which all cells are cut out but one, this cell being left to make a young queen for the colony. I congratulate him on his uniform success; but I frankly confess that, when I cut out cells trying to leave but one, sometimes I miss some crooked little apology for a cell, tucked away under a bottom-bar or other place where it has no right to be—and needless to say what happens then. When I get some of our helpers to do this work, they generally miss more cells than I do, and that is worse than ever, so far as final results are concerned. Another serious objection to treating full colonies like that in the honey flow is the fact that with us too high a percentage of the queens are lost in the mating flights; and strong colonies, left queenless so long at that time of the year, are a bad proposition to deal with.

[As we understand it, Mr. Pettit does not leave one queen-cell to requeen the colony; but he destroys all queen-cells nine or ten days after taking away the old queen, to prevent swarming, and then introduces a young laying queen. (See Gleanings, June, 1922, page 390, and June, 1921, page 341.) By doing this the colony is without a laying queen only while they are building queen-cells. Mr. Pettit does not claim uniform success with this plan; for he says on page 390, June, 1922 issue, ''Sometimes *we* fail, but the plan, if properly carried out, never does.''—Editor.]

I wish we had some handy, dependable plan for requeening colonies in a wholesale way, minus the objections that all plans I have heard off to date are afflicted with. Until I hear of this perfect plan we shall, I fear, follow the old way of requeening all colonies that have poor queens as fast as we find them and can give attention to them, and putting up with a loss each spring from failing queens. This loss is altogether too high some years to suit me; but, in the absence of knowing some better way, I shall continue charging this item up to ''profit and loss.''

Honey is still moving slowly and at various prices. In our own locality I have actually noted a difference of four cents a pound at retail, in distances not exceeding five miles between beekeepers. This is not as it should be; but, under existing circumstances, the matter is a difficult question to deal with. Fruit is still abundant and I feel that, after the glut of fruit is past, honey sales will be much improved. We do little retailing and have refused to sell small quantities at the same price as we made in carlots. While I feel that some have sold altogether too low, yet we must not forget that all farm produce has shared in the general drop in prices. After all is said and done, agriculture in its various phases is still the basic industry, and, when general lines of farm produce are low, that affects the buying power of all classes, and naturally honey is affected in common with other lines. But if prices should go lower than they are now, ''overhead,'' whatever that means, must be reduced if we are to produce at a profit. J. L. Byer.

Markham, Ontario.

* * *

In New York.—It has long been customary for many beekeepers in this state to place their bees in the cellar at too late a date. The good derived from a very late cleansing flight does not offset the loss in energy and in stores due to too long exposure. Temperature records since 1906 indicate the date for a last cleansing flight varies according to the location; Northern Plateau, November 2; Atlantic Coast, November 17; other sections are in between these two dates.

When, through telegraphic reports to this office, temperature records indicate that bees have enjoyed a cleansing flight, and when weather forecasts indicate unfavorable weather following, we shall wire the association secretaries that the time is right to put bees in the cellar. The secretaries in turn will notify key men in the various sections of their territory, who will forward word to the individual beekeepers. In this way we hope to conserve the strength of more colonies in New York.

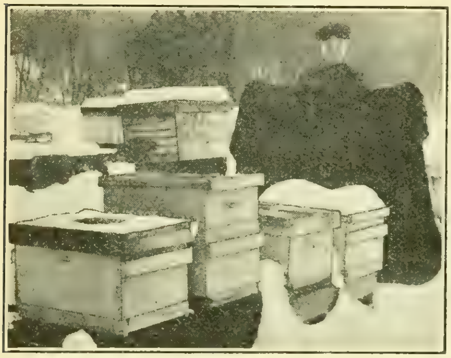
Two of the strongest associations in the Empire State are the Western New York Honey Producers' Association and the Eastern New York Beekeepers' Co-operative Association, Inc. From recent correspondence with officers in these associations I learn that the greatest problem in these important beekeeping sections of New York is marketing. The particular phase of the problem in which the beekeepers are most concerned is one that does not lend itself readily to solution, and that is the matter of price-cutting.

When markets are glutted with any product and one needs cash immediately he may be forced to cut his price to move his crop. The season of berries and other summer fruits is over, and honey is moving agreeably fast. The demand at grocers and roadside markets has picked up, and buyers are active. The tariff on foreign honeys will soon make itself felt. Indications at present point to a clean market by the next honey season, and yet we have here and there a beekeeper who confounds the public by his seeming ability to undersell his fellow beekeepers. More of him later.

Ithaca, N. Y. R. B. Willson.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Value of Winter Protection. Having increased the number of my colonies, last year, I was short of winter cases, and did not have time to make any. This picture shows plainly how the heat of the cluster melted the snow on the hive covers, even on a double cover, the one nearest in the picture.



Heat from the cluster melts snow on covers. Note depth of snow on the large packing-case.

The dark-colored blanket was held up to show more distinctly just how much the snow had melted on one hive.

Although it does not look like it here, it proved to be a mild winter in this section, so that even these unprotected colonies came through in good shape.

This winter I have more bees than ever, but am fortunate in having a good bee cellar under the dwelling house, where I shall put some of them, rather than leave them unprotected or packed in snow.

Lebanon, N. H. P. N. Townsend.

◆

A Word About the Bee-Smoker. There is perhaps no other tool or implement for the apiarist so necessary as a good smoker. A neighbor wanted to take a swarm of bees out of a frame building recently and had to give up the job because the smoker worked poorly. The best smoker is hardly good enough for the professional beekeeper; yes, and he wants a smoker holding a large amount of fuel. After all there may be a limit to which this feature might be carried. We have used the Jumbo size, 4-inch firebox, 7 inches high. A still larger smoker has been put on the market, 10 inches high or reaching 3 inches above the bellows. We procured it but find it unwieldy. It is too high, and we do not use it except when driven to it. The Jumbo size 4 x 7 is large enough and not too large.

As to the best fuel, sumac bobs may be good, but if they are as good as the Coggshall cartridges I shall be surprised. Old phosphate or bran sacks, that have taken the drip under the car, dried, rolled up and cut into cartridges 5 inches long, are the handiest things for that use that we have found. F. Greiner.

Naples, N. Y.

[This is one of several short articles, still in our files, by the late F. Greiner, whose untimely death was announced in our last issue.—Editor.]

◆

Net Weight Law in New York State. In your August number of Gleanings in the columns entitled ''From the Field of Experience,'' you publish a statement by the late F. Greiner of Naples, N. Y., in which he states that it is necessary to mark the actual net weight on each section of honey sold sold in New York state. I have a statement from the Director of the Bureau of Weights and Measures, Department of Farms and Markets at Albany, N. Y., stating that such marking is unnecessary. His statement reads: ''This Bureau contends that it will be sufficient if the case holding the combs of honey is marked with the number of combs it contains. We do not require that each individual comb be marked as to the amount of its net contents.''

New York state comb-honey producers may safely be guided by the above interpretation of the law. It should be borne in mind, however, that honey which leaves New York for interstate commerce must have the net weight stamped on every section. One ounce must be deducted from the total weight for the wood of the section, in order to get the exact weight. It is not sufficient to mark the sections ''Not less than 12½ oz.'' or ''14 oz.,'' but each section must have its own weight stamped on within an error limit of ½ oz. On the shipping case should be stamped the number of sections. This is the Federal law.

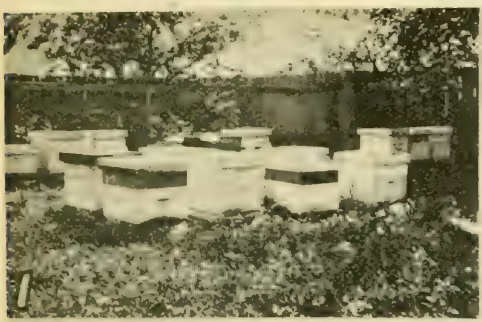
Ithaca, N. Y. R. B. Willson.

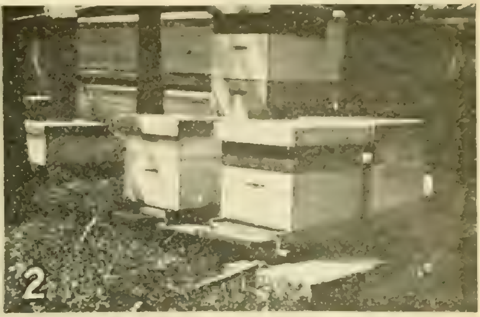
◆

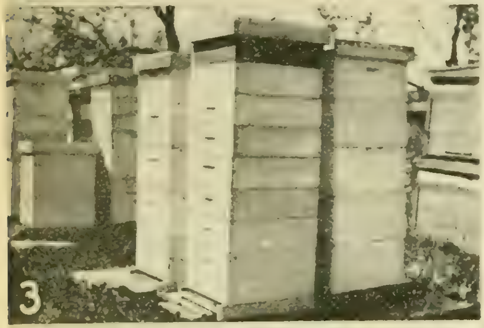
Selling Honey from House to House. Last year I loaded a 20-gallon honey tank, together with scales and an extra supply of honey, on an automobile and proceeded to canvass the town and country. This was hard work; but in this way I sold all my own honey, helped a neighbor beekeeper to sell his and later I bought seven cases of extracted honey from a beekeeper in another county, which I sold out at auction at community sales. These sales are held semi-monthly in various towns of our county. The honey is put up in one-quart Mason jars and auctioned off at a certain figure. S. W. Mace.

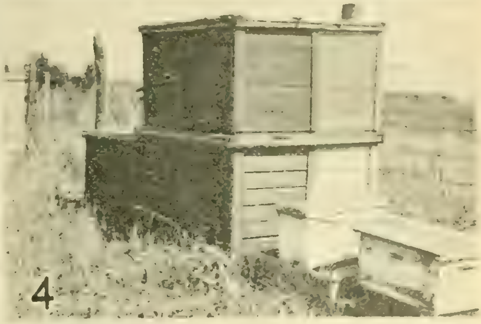
Middlebury, Ind.

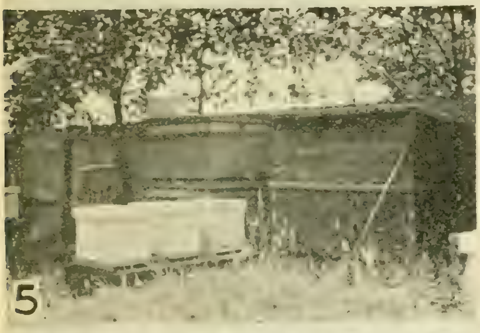
HEADS OF GRAIN FROM DIFFERENT FIELDS

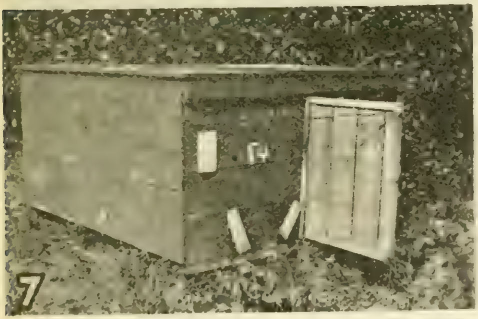


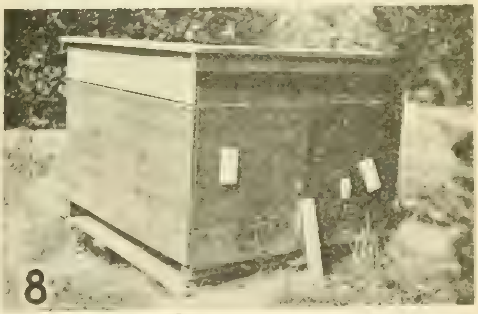












1. 140-colony apiary of Burt Schimmoeler, Ft. Jennings, Ohio. Note shallow extracting-supers (food chambers) painted different color to be sure they are not taken away. 2. Food chambers are tiered up among the supers during the summer. 3. Look like skyscrapers, but they are only extracting-supers being cleaned up after extracting. John Leininger, Ft. Jennings, Ohio, paints the ends of his quadruple winter cases in different colors to prevent drifting. 5. Quadruple winter cases make good storage for packing material during the summer. 6. A row of trees along the roadside causes the bees to fly high when crossing the road as well as forming a good windbreak for winter. 7. An old cover fastened to the front of the winter case prevents drifting. 8. A stake differing in color from the winter case, set between the entrances, prevents drifting.

BEES, MEN AND THINGS

(You may find it here)

"A SEASON of heavy brood-rearing in northeast Texas has exhausted some queens that are quite young, resulting in supersedure. These queens are swarming in many instances and giving us a fall problem a little out of the ordinary."—C. C. Stone, Lamar County, Texas.

"I pack my bees for winter in two stories. In fact, I give them two stories the year around and find that it pays."—Jackson Davis, Boyle County, Ky.

"I have 25 colonies of bees and secured an average of 100 pounds of white extracted honey from each colony this year. I sell nearly all my honey at retail and get retail prices."—A. W. Pease, Grand Traverse County, Mich.

"I use two nails in the ends of bottom-bars of frames, nailing one after wiring. I use a stick cut a little short between the end-bars to hold the unnailed one in place while wiring."—N. H. Craig, Snohomish County, Wash.

"I have just finished extracting 1050 pounds of excellent honey from 7 colonies, spring count, which I increased to 14. I have about 200 pounds of honey which I have not removed and which I intend to keep for spring feeding."—B. H. Haynes, Dunn County, Wis.

"Comb-honey production under tropical conditions is more than an art, when one considers that nothing short of giving the bees an extra hive-body with full sheets of foundation in the spring will prevent the bees from swarming. Furthermore, they may swarm again when the heavy autumn honey flow comes on."—Axel Holst, St. Thomas, Virgin Islands.

"I started with three colonies this year, never having seen the inside of a beehive until this spring. I increased to 12 good strong colonies and took 315 finished sections of comb honey and 512 pounds of chunk honey in shallow extracting-frames. I think this is pretty good for a beginner, but I find I know but little about it although I have purchased and read nearly every available book on the subject."—Harold I. Perrin, Custer County, Nebraska.

"Taken altogether, this has been a good year here. With the exception of a few days in the month of August bees have gathered some honey all the season. White clover did not yield abundantly, but it was a fair crop. Many of my best colonies stored two or three supers from it, and some of them more. We have had the best late yield here from Spanish needle, heartsease and goldenrod that I have seen for many years."—E. H. Vincent, Ottawa County, Okla.

"I became interested in Campanilla Blanco, and secured some seed from Mr. Miller of Holguin, Cuba, and planted it here on the island. On Dec. 5 last year it bloomed and continued in bloom about eight weeks. The bees covered it every day and I am satisfied that, if I had had enough of it, it would have given me some Christmas honey. It produced an abundance of seed, and I have about a peck of seed from 15 vines."—A. P. Applegate, Lee County, Florida.

"I have had the best fall honey flow that I have ever harvested. We had no clover honey to speak of, but have secured from two to four supers of buckwheat and goldenrod honey. We had plenty of rain all summer and lots of white and alsike clover, but it did not yield much."—D. B. Hill, Mercer County, Pennsylvania.

"It isn't time to go south from Ohio yet. The good old Buckeye state is good enough for me when bees will swarm six months in the year. I have hived bees in April, but this is the first time I ever was guilty of such a thing in September. On September 28 I hived a swarm that had clustered on a cornstalk. I put in a lot of honey from another hive because the bees were such nice golden fellows that I could not let them go."—E. L. Seville, Ashtabula County, Ohio.

"Last fall when the last of my bees were packed for winter, the entrance was closed tight on two colonies and this was not discovered until Feb. 4. The weather for three weeks after they were packed was good, and the bees flew freely when they could. One of the closed-tight colonies was in good condition when I discovered it, but the other was a wreck. If our weather had been normal doubtless all would have died, but for 10 weeks we had unbroken cold, and bees were unable to fly."—E. J. Ladd, Multnomah County, Wash.

"A thousand men with a thousand plans have promised better results in beekeeping in the journals during recent years; but how few tell us anything of how the plans work out. John E. Roebling told of wintering his bees in two-story hives, the broodnest being above and an escape-board, without the escape, being placed between the hive-bodies. Something like this has been reported as worse than useless, but the idea looks promising for a number of reasons. How did it work? And you, Mr. Many-A-Man, how did your plan work out, be it for increase, swarm control, new equipment, wintering, or introducing queens? I want to know."—E. F. Atwater, Ada County, Idaho.

JUST NEWS

Editors

THE American Honey Producers' League will meet at St. Louis on February 6, 7 and 8, 1923. An unusually high-grade program of addresses on honey production and marketing is being prepared, and a large attendance from all parts of the United States is anticipated. The business meeting of the delegates from state and commercial organizations will occupy part of Tuesday and all of Thursday, Wednesday being devoted entirely to the popular program and to committee meetings. The state associations of Missouri and Illinois will also hold special sessions at St. Louis the same week according to present plans.

The Northern Virginia Beekeepers' Association has just recently been organized. Clinton H. Shockey, Vienna, Va., is the secretary of this association.

The date for the next meeting of the Oregon State Beekeepers' Association has been set for Nov. 17 and 18. The meeting will be held at Portland, Oregon. Further particulars in regard to this meeting can be had by writing to Prof. H. B. Scullen, Secretary, Oregon State Beekeepers' Association, Corvallis, Oregon.

Ten of the local associations affiliated with the Wisconsin State Beekeepers' Association have already agreed to make annual contributions to the Miller Memorial Library. These associations are in Richland County, Northeastern Wisconsin, Baraboo Valley, Milwaukee County, Sheboygan County, Marathon County, Washington County, Winnebago County, Price County and Rock County.

The annual meeting of the Illinois State Beekeepers' Association will be held at the St. Nicholas Hotel in Springfield Dec. 6 and 7. Allan Latham of Norwichtown, Conn., will deliver one of the addresses. Other speakers expected to be present are E. R. Root, C. P. Dadant and Geo. E. King. Further particulars in regard to this meeting may be had by writing to M. G. Dadant, Secretary, Hamilton, Ill.

The annual meeting of the Chicago Northwestern Beekeepers' Association will be held Dec. 4 and 5, 1922, at the Great Northern Hotel, Chicago, Ills. A representative of the American Honey Producers' League will be present, and a good program is promised. Further particulars in regard to this meeting may be had by writing to J. Frank Haan, Sec.-Treas., Chicago Northwestern Beekeepers' Association, Des Plaines, Ill.

The Iowa State College of Agriculture and Mechanic Arts has issued an announcement of courses for poultrymen, beekeepers and horticulturists, to be held this winter. The courses in beekeeping, as outlined in this prospectus, are very attractive. Those who contemplate taking a course in beekeeping will do well to write to the Iowa State College of Agriculture, Ames, Iowa, asking for this prospectus.

The Western New York Honey Producers' Association will hold its annual meeting at the Hotel Statler, Buffalo, N. Y., on Monday and Tuesday, Dec. 4 and 5. An excellent program is being arranged, several speakers from out of the state being scheduled to speak at this meeting. For program and other information write to H. M. Myers, Secretary, Ransomville, N. Y.

The Wisconsin State Beekeepers' Association will hold its annual convention at Milwaukee, Wisconsin, Dec. 14 and 15, at the Auditorium. The Board of Managers' meeting will be held on the afternoon of Dec. 13 at 2 o'clock. The Wisconsin Products Exposition will be held at Milwaukee, Dec. 14 to 20, and the State Beekeepers' Association will have a Honey Booth at this Exposition.

The Empire State Federation of Beekeepers' Co-operative Association, Inc., will hold an annual meeting at the University of Syracuse, Syracuse, N. Y., Tuesday, Wednesday and Thursday, Dec. 5, 6 and 7. The meeting will be addressed by prominent beekeepers, and a banquet is being arranged for Tuesday evening to be followed by an illustrated lecture. On Tuesday some beekeepers will be tried by council and judged for not producing more and better honey. Further particulars in regard to this meeting can be had by writing to O. W. Bedell, Secretary, Earlville, N. Y.

In conjunction with the Mid-West Horticultural Exposition to be held in Council Bluffs, Nov. 13 to 18, the Iowa State Beekeepers' Association is planning a mid-west beekeepers' meeting, which will be of great importance and value to the honey producers of the West. A special program is arranged for Tuesday afternoon, Nov. 14. On Wednesday, Nov. 15, the beekeepers are invited to a meeting with the Pomological Society in joint session, at which time they will be addressed by Prof. L. H. Bailey, their president. In the afternoon a session will be held at the plant of The A. I. Root Company of Iowa.

GLEANED BY ASKING

Geo. S. Demuth

QUESTION.—Is there any way for the layman to recognize honeydew honey?
F. W. Barthel.
New York.

Answer.—Honydew honey usually has a cloudy appearance instead of the clear, sparkling appearance of floral honey. It varies in color from almost clear to very dark or almost black. It can usually be detected by taste, the flavor being somewhat like molasses, and quite unlike floral honey. In case of doubt, a rough test for dextrin can be made as follows: Put about a half pint of alcohol into a flask; then add about half a teaspoonful of the honey known to be pure floral honey and shake the flask to mix thoroughly; then note the degree of milkiness of the mixture. Now test in the same way a sample of what is thought to be honeydew. If the mixture looks like it did in the previous test, it is not honeydew; but if it becomes cloudy and particles of gum are precipitated, indicating a large percentage of dextrin, it is no doubt honeydew.

Detecting Granulation in Comb Honey.

Question.—Is there any method of detecting granulation in comb honey, when it is partly granulated, without damaging it? I can detect badly granulated sections by the appearance or by holding them before a light. J. A. Slatterwhite.
Virginia.

Answer.—By thrusting a needle into the honey and noting the resistance, granulation in comb honey can be detected without spoiling its appearance.

Difference Between Hubam Clover and Biennial White Sweet Clover.

Question.—What is the difference between Hubam clover and the common white sweet clover that we have here? Vona Focht.
Missouri.

Answer.—The most important difference is that Hubam clover is an annual, growing to maturity the first year, while the common white sweet clover (*mellilotus alba*) is a biennial, not blooming until the second year. It is difficult to distinguish between these two kinds of sweet clover when both are in bloom, though this can be done by examining the roots, since the large root of the biennial has a sort of shoulder marking the separate growth of the two seasons.

Amount of Honey Stored by Single Bee.

Question.—How much honey does a single worker bee gather in its lifetime? Willie Rutter.
North Dakota.

Answer.—The amount of honey that a single bee can collect during its lifetime varies of course with the amount of nectar available. It is only those workers which are on hand during the honey flow that are able to gather any considerable amount. Under the most favorable conditions a bee that begins field work at the beginning of a good honey flow might carry in enough nectar to make about 1/6 of an ounce. This would be enough to fill about 15 cells of the ordinary depth in combs spaced 1⅜ inches. This is counting a single worker carrying enough nectar to make 3/10 of a grain of honey at a load and carrying six loads per day for about 40 days. The actual amount gathered by a single bee must be much less than this. When nectar is scarce they carry smaller loads, and the average number of trips per day is probably not more than four or five. If each worker should carry in enough nectar during her lifetime to make 1/6 of an ounce of honey, a colony having 40,000 field workers would store over 300 pounds within six weeks. From this it would seem that during the honey flow of an ordinary season the field workers during their lifetime do not carry in enough nectar to make more than about 1/12 of an ounce of surplus honey, or enough to fill seven or eight cells, and some seasons much less than that.

Ventilation of Hives in Cellar.

Question.—When wintering in the cellar should the covers of the hives be loosened and raised a little at one end or left sealed tight?
New York. G. B. Talcott.

Answer.—It should not be necessary to provide upward ventilation in this way, provided the temperature of the cellar is high enough to prevent condensation of moisture within the hives. The moisture from the breath of the bees in a tightly sealed hive will pass out through the entrance in the form of vapor as long as the temperature of the inner walls of the hive is above the dew-point (the temperature at which condensation takes place); but if the inner walls of such a hive become chilled below the dew-point, the moisture is condensed on the inner walls of the hive and, later, water may run out of the entrance. When this occurs it takes place first on the hives in the lowest tier where it is colder, and, if the temperature of the cellar does not go too low, condensation may take place only in the hives in the lower portion of the cellar. It is better to prevent condensation by raising the temperature of the cellar than by opening the hives at the top, thus causing a rapid loss of heat from the hive through this opening. If the bees are wintering well they should remain quiet at a temperature high enough to prevent condensation; but if they are not wintering well because of poor stores or some other cause, they become more active and therefore give off more moisture, thus increasing the possibility of condensation.

License for Peddling Honey.

Question.—My local town demands that I pay for a license to sell honey to my neighbors. What is the law in regard to this? I do not buy and sell honey but want to sell only honey produced by my own bees which are in another state.

Kentucky. Mrs. Bessie Gildea.

Answer.—It is only by a town or city ordinance that you can be prevented from peddling honey. Most towns and cities having such ordinances permit local producers to sell their products without a license. It will be well to take this up with the town attorney, explaining that you desire to sell your own produce in the town, and ask if a license is necessary under the circumstances.

Ventilation for Bee Cellar.

Question.—Please tell me how to make a ventilator in my bee cellar. It is 9 x 9 x 6.

Ohio. Vincent Vlk.

Answer.—The usual plan is to make a wooden flue, eight or ten inches square, by nailing four boards together to form a rectangular tube. This tube extends from near the cellar floor out through the roof of the building above the cellar. Such a ventilator should be arranged so it can be closed during the coldest weather to prevent cooling off the cellar too much.

Granulation in Comb Honey.

Question.—How long will section honey keep without granulating? A. N. Hilliard.

Colorado.

Answer.—This depends upon two things: (1) the source and character of the honey itself, and (2) the care it receives after being taken from the hives. Some comb honey granulates soon after it is stored, while honey from other sources does not granulate within the first year. Alfalfa honey granulates more readily than clover honey, while sage honey and tupelo honey remain liquid almost indefinitely Usually that which is stored rapidly during the height of the honey flow has less tendency to granulate than that stored slowly near the close of the season. Granulation is hastened by cold weather and fluctuating temperatures, but can be retarded by keeping the honey in a warm room at a constant temperature.

Wintering Bees in a Shed.

Question.—Can bees be wintered successfully by carrying them into a shed and leaving them there during the cold weather? Geo. A. Harper.

Wisconsin.

Answer.—No. The only advantage of the shed over leaving the bees out in the open would be whatever protection from the wind the shed might afford, and the bees would be denied the benefit of the winter sun shining on the hives on clear days. It will be much better either to put the bees into a good cellar in which the temperature does not go below 45°F., or pack the hives well in winter cases unless you are using double-walled hives, and provide a good windbreak if the bees are not already located in a sheltered spot.

American Foul Brood in Comb Foundation.

Question.—Can American foul brood be transmitted in comb foundation made from wax obtained by rendering diseased combs? I have one colony which contracted American foul brood in combs built from foundation this year, while no disease can be found in the old combs in the same hive. Arthur F. Sauer.

Indiana.

Answer.—Apparently American foul brood is never transmitted in this way. In many cases, combs from diseased colonies have been rendered and the wax used in making foundation which was given to the bees immediately without any evidence of disease ever being transmitted in this way. Foundation has been shipped for years into Porto Rico and other regions where no American foul brood exists, without the development of the disease there. In your case no doubt the disease was carried in from a diseased colony in the neighborhood. The fact that it appeared first on a comb recently drawn from foundation means simply that the infection happened to be fed to larvae in that comb first instead of in one of the old combs.

Effect of Heating Honey on Vitamines.

Question.—How can granulated honey be liquefied without destroying the vitamines?

Rhode Island. S. H. Draper.

Answer.—In heating granulated honey to liquefy it, no doubt some of the vitamines are destroyed; but, if the honey is not kept hot for too long and is not heated above 150°F., the destruction of vitamines is probably very small.

Saving Queen from Diseased Colony.

Question.—Is there any way, this late in the season, that I can save a good Italian queen which is in a colony afflicted with American foul brood?

Ohio. C. L. Greene.

Answer.—If the colony has not been weakened too much by the disease, you can save not only the queen but the bees as well, by shaking them from their combs and giving them combs filled with honey taken from a healthy colony. Solid combs of honey from an extracting-super are excellent for this purpose. If the colony is quite small, two or three combs of honey will be enough. The hive should then be reduced to fit the colony, the vacant space being filled with chaff-cushion division-boards or a tight-fitting division-board with packing material behind it. If combs of honey are not available the bees can be given a cake of hard candy and confined to their hives for a few days, then given empty combs known to be free from disease and fed sugar syrup for their winter stores. You could also save this queen by killing the queen of another colony and introducing the more valuable queen, but it is difficult to find queens after brood-rearing has ceased. It is possible to change queens in this way in colonies in the cellar in midwinter, but this is not pleasant work.

Storing Extracting-Combs for Winter.

Question.—What is the best way to store empty extracting-combs during the winter to keep out the wax moth. Ray H. Courtney.

Iowa.

Answer.—Simply pile up the supers of extracting-combs in tight piles in the honey house so the mice can not get in. Exposing the combs to freezing temperatures for a few days will destroy the moth larvae.

OUR HOMES

A. I. ROOT

Thy kingdom come; thy will be done on earth as it is in heaven.—Matt. 6:10.

Be fruitful, and multiply, and replenish the earth, and subdue it.—Gen. 1:28.

I the Lord thy God am a jealous God, visiting the iniquity of the fathers upon the children unto the third and fourth generation of them that hate me.—Exodus 20:5.

JUST now friends, Sept. 26, there is great excitement about the matter of letting up on our prohibition laws. The Literary Digest has been largely instrumental in starting it by about *one million* "straw votes." I suppose they intended, or at least planned, to have it appear they did this just to feel the pulse of the people, or perhaps we should say, the voters; but when the matter was first mentioned I decided the wets would rush forward, recognizing this as their last hope, or, perhaps, we should say, fight in the "last ditch" to get intoxicating liquors back again. The drys—at least a large part of them—showed but little interest in the matter. They were satisfied with the prohibition laws we have already, and felt interested only in a more strict enforcement of them. Well, in this Home paper, coming out just before election, I wish to give a reason for prohibition that I have not seen urged anywhere in any of our temperance literature. Of course, I have not read *all* of it. No person could well read up understandingly all, that is before us on the subject just now. Before I make my plea, let me digress a little.

There is just now a great stir, especially in our cities and large towns, in regard to automobile accidents. A large part of the accidents result from speeding in defiance of our city limit laws; but the fines have been so light that the authorities in at least many cities have added 10 to 25 days in prison, and this has helped the matter, but still accidents and deaths continue. The deaths are mostly those of children. Our little boys and girls will start across the street, especially near our school buildings, and sometimes in dodging one vehicle they will run right in front of another. Of course we have notices reading "Go slo," giving the driver warning that a school is near; and I think that the law-abiding people do heed these signs and "go slo." Sometimes, however, in the endeavor to meet an appointment, to catch a train, or in case of sickness, they take the chances and pay the fine. I think imprisonment is seldom enforced in such cases. I have been searching the dailies for some time with a desire to find out what part *intoxication* plays in these infractions of law and city regulations. Sometimes just a brief hint is given, that the driver was intoxicated; and then I have watched closely for the penalty. It runs from 10 to 25 days. If the party happens to be well-to-do he pays the fine, and perhaps does the same thing later on. Sometimes where disaster occurs an imprisonment of 10 days is added. But it vexes me to see how easily these recreants are let off. It seems to me that our people at large are forgetting what might happen by letting a drunken man, or even a *drinking* man, run an automobile. I remember, if you do not, how many times in years past drunken men or drinking men have said by actions if not in words, "Who cares?" And his *actions* often say, "Who cares *what* happens?" Let me give you just one illustration:

A man (or I might say a boy) who had been drinking lay down in front of a train of cars. I pulled him out of danger, and walked a mile or more to get him near his home. In leaving the railway we had to get over a cattle guard. I cautioned him to be careful, and tried to help him; but he told me to get out of the way. He said he could get over it without any help. When I, notwithstanding, tried to keep him from hurting himself, he struck me a swinging blow that nearly stunned me, and tried to *run across* the beveled edges of the hard pieces of oak. He slipped down between the wooden guards, just as I expected he would, and bruised his legs so badly that the blood ran down into his shoes. When I expressed alarm at the way he had hurt himself he replied something like this:

"Oh! that's nothing. When a man's 'full,' he does not feel a hurt like that." And he might have added that when a man is full he does not care *what happens*. Now please keep in mind that he uttered a truth that does not seem to be well understood. A drunken man running an automobile does *not* care what happens. He is liable to run into a crowd of women or children, or into a telegraph pole, smash his machine, and cripple the occupants for life or kill them outright; and yet while I write there seems to be, at least among certain people, a kind of indifference that almost amounts to partially excusing a man, *because he was drunk*, when he was driving his machine, and hence was not fully responsible.

Yes, I know that the wets are urging that beer and light wines do not intoxicate.

Now, here is another thing the whole wide world just now seems to be forgetting:

In olden times, when the beer sold at corner groceries did not contain very much "kick," there were not only men but boys who would drink a dozen glasses, one after another, in order to get the "kick" they wanted. I know of a man who, on a bet, drank between 30 and 40 glasses of beer inside of half an hour. Our churches and college professors, and God-fearing men and women, are rejoicing at what prohibition has accomplished—more money in the bank, better health, children better clothed, better educated, better nourished, and a thousand things going on to indicate that the time is coming when God's kingdom shall come and his *will* "will be done on earth as it is in heaven."

Now, friends, with the above introduction I wish to suggest to you something still more appalling that comes through strong drink, and this is the thing that, it seems to me, our temperance periodicals and our temperance addresses are forgetting. It is an awful thing for a drunken man to drive an automobile through the streets of our great cities while intoxicated or even partially intoxicated. Our second text refers to the matter of getting married and bearing children. Now, suppose a man or some creature in the semblance of what a man ought to be, should undertake to "replenish the earth" with offspring while intoxicated. Suppose, under the influence of liquor, he should come home and abuse the poor patient wife and mother. I remember vividly a case of this kind—in fact, it was a near neighbor that I was called on to protect, a poor woman, who already was the mother of a large family, from the outrages of the drunken husband. We put him in jail until he was sobered and had promised to do better; but the half-dozen little saloons in our town kept right on doing business supplying him and others of the crowd like him with intoxicating drinks.

While I write, the daily papers are all discussing the matter of what we may call the "carnival of criminals;" and the greater part of these criminals are comparatively boys; and further investigation reveals the fact that at least many of them were born of a drunken parent. Very likely the father and possibly the mother were under the influence of liquor at just the critical time a few months before their child's birth. This is in accordance with what we are told in our last text, that the sins of the fathers follow through coming generations; and it does not seem to have occurred to even the good people of our land that we have got to enforce our prohibition laws for a generation or two before we get entirely rid of this business of breeding criminals.

Pardon me for another little digression. In my boyhood I was much given to poultry as well as to bees; and we had so much trouble with sitting hens that a new breed called non-sitters was introduced. The Leghorn hens would never or but seldom sit. Now, is it not quite likely that we can get a better breed of humanity—that we can have some children that are not born under the awful curse of strong drink? Being run over with an automobile in the hands of a drunken man in our cities, and maiming a child for life, are awful; but is it not incomparably more awful to bring children into the world, cursed (even before they are born) with a tendency to crime and guilt and murder?

Now, friends, perhaps you will think that my challenge in the above is enough; but maybe what I am about to touch on now is even *worse* than the above. Let me give you briefly one illustration of what I have in mind. The story was told me by the *man himself*, so I think there can be no mistake about it.

Because of a real, or an imagined affront from his wife he went and got drunk on *beer*. While in that condition he visited a place of ill repute where he would have never gone when sober. He there contracted a loathsome disease. It is contagious, and, I might almost say, incurable. Of course he gave it to his poor wife; and if it was not the cause of her death it was contributory. A year or two afterward he married a second wife, and gave her the same malady as a matter of course. Years afterward the children of his second wife were cursed with troubles that physicians pronounced the outcome of that little incident of drinking beer. See our last text. Now, this contagious disease I am talking about was found in some localities in the United States in such a severe shape that it prevented quite a large percentage of the young men from being taken into the army. As I said in the beginning, I do not know that this matter has been recognized as having any bearing on the subject of prohibition; but statistics already show that such diseases are getting to be largely a thing of the past; and do you not agree with me that *prohibition* has already had a lot to do with bringing it about?

May God help us in this coming election to turn in a mighty flood of righteous indignation and stem the current of crime that once more threatens us. Satan sometimes gets desperate, especially when he is crowded into the last ditch; and may God grant that this humble plea of mine for righteousness and temperance and purity may help to give the wets such a stinging rebuke that they may be led to give up their case as hopeless, and that peace on earth and good will to man may rule for the coming ages.

It is my pleasure, in closing the above talk, to be able to present to our readers a thought expressed by that grand, good woman, Miss Francis E. Willard, not long before her death. I clip it from "The No-Tobacco Journal."

> **The Right of Every Child to Be Well Born.**
>
> Compared with any other law, I hold in highest dignity and most awful significance the law of the descent of inheritance; of pre-natal influence; of the determining of destiny before a human being has ever known an independent heart-beat or an intelligent volition.
>
> I believe that all reforms have their root here, and that a wiser, more thoughtful age, not very far distant, will stand aghast as it reads of the madness of the present dance of delusion and death in respect to the right of every child to be well born.

Mammoth French White Jerusalem Artichokes by the Hundred Acres.

I found by looking on the map that Franklin, Pa., where the "River Ridge Farm" is located, is only a little over 100 miles from Medina, O. So I wrote friend Sibley that we were planning to make him a visit, and asked for directions to reach his farm, for we would probably make the trip there and back in one day by starting very early. He wrote back at once, remonstrating against so short a visit, telling me to come and bring my friends along and stay over night, as he had quite a lot of things to show me. We found the "Farm" located on a small mountain of about 1300 acres. A beautiful automobile road or drive led from the base of the mountain to the summit, where we found a spacious mansion and a wonderful view of the Allegheny River and railways on either side of the shore. The roadway up the mountain is one of the finest pieces of work in the way of road construction (that will stand the storms and frosts of winter) that I ever looked over. All along the route are various cottages. Very good building stone was found in great profusion somewhere near the summit of the mountain, and this stone was cut to accurate dimensions by competent stonecutters, and then just moved *down hill* to where it was wanted. "Entrance Lodge" is a beautiful structure.

One of the prettiest things on the route was what they call the chime of bells, of which I shall have more to say further on. It was so near night when we arrived that I did not have much time to visit the artichokes, but planned to be up bright and early the next morning to look them over. There were not only fields of artichokes, but one of the most beautiful well-kept gardens, growing almost everything a family can want, that it was ever my pleasure to see. A few of the artichokes were about as large as a pullet's egg, and some of these I carried home to plant, even if it was only the middle of August. Not only has friend Sibley experimented with fruits and vegetables, but he has some of the most beautiful flowerbeds in and about his grounds. He has also been a "chicken man"; and not only is there fine poultry but a beautiful duck-pond with ducks and geese by the hundreds. Various kinds of wild game are also to be seen; and special yards contain pheasants and partridges.

The artichokes, even at the date I mention, were away up high above our heads, and they were already cutting the artichokes for ensilage and also to cure for hay for feeding the horses, cattle and other kinds of livestock, verifying what I told you in our journal for October.

Last, but not least, I want to tell you something more about that chime of bells. But first let me digress a little. When I was about 13 or 14 years old, in order to attend a high school, I spent a winter with an aunt at Wellsville, Ohio, on the Ohio River. Even at that early age I was exploring nature; and one Saturday afternoon, while out in the woods, I got hold of some poisonous plant, and my face swelled up so that my eyes were closed. The doctor said they would have to be bandaged and kept closed for two or three days. So your old friend was virtually "tied up" for a time at least, with nothing to do. My good aunt, however, taught me how to play a little French accordion. She had just got a little music-book along with the accordion, and this book contained an old piece called "Bonnie Doon." I find it now advertised in our list of phonograph records. But in those days while I was blindfolded, I gave the whole neighborhood *Bonnie Doon* until they were probably tired of it. Let us now get back to that chime of bells.

A picture card I hold in my hand tells me there are 11 bells, weighing "from 550 to 3870 pounds," and friend Sibley has penciled on the back of the card as below:

> Plays all church and most popular tunes. Played morning and evening each day for one hour. It is one of our best investments in morals.

After we looked over the beautiful structure, a little slip of girl, maybe a dozen years old, was called up to play the chime of bells. The keys to her instrument looked exactly like a lot of pump-handles all in a row. She had to skip back and forth to reach the appropriate keys. The expression to the chime was determined by the amount of force with which the player struck the blow on each bell, and also by the way she kept time. Well, what do you suppose happened? The first piece she played was Bonnie Doon! As the entrancing beauty of that wonderful melody reached my poor deaf ears—deaf to most ordinary music—I first uncovered my head as I stood out in the bright sunshine, and then I began to cry; but my tears were tears of joy and not of sorrow. Let me digress a little.

Since Mrs. Root's death I have had a new glimpse of heaven. There is one of the old Gospel Hymns that reads:

I know not the hour when my Lord will come
To take me away to his own dear home:
But I know that his presence will lighten the gloom,
And that will be Heaven for me.*

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*This hymn was my good old father's favorite and as he drew his last breath on earth I held his hand while I sang the hymn

Well, I often think of that hymn, and I fear I have been tempted to put the name of dear Mrs. Root first instead of the Lord and Savior. Well, if heaven means another meeting with the dear wife, it would *surely* be "*heaven* for *me*"; and if I am to hear music such as that little girl produced on that chime of bells, that *too* will be beyond any joy I ever expected to feel here on this earth. After she ceased and had gone back home I could not get the memory of it out of my mind; and my kind entertainer, Mr. Hanna, soon called her back again to play Bonnie Doon *once more* for your old friend A. I. Root. Of course I asked questions. I wondered at the marvelous skill of such a child, and inquired who taught her to play. It was the manager's *wife*, and we had the pleasure of meeting *her* too. She said Bonnie Doon was the one piece that she learned to play without written music.

The next thing after the chime of bells was a visit to a little chapel. Friend Sibley has about 35 men working on his 1300 acres, and most of these men have families, and these families constitute quite a little village about the chapel. In this chapel they have a Sunday school every Sunday, and preaching or some sort of address to the people when a speaker can conveniently be secured.

On our way up the mountain I noticed quite a few oil-pumping rigs in operation. I have forgotten how many of them are scattered all over the mountain. A "powerhouse" conveniently situated operates the pumps, and they are pumping up oil more or less every day. When I inquired how long these pumps had been working like that, they said, about *thirty years*. You will notice in the above this is probably one of the first localities in Pennsylvania to hear of the great oil excitement in 1859; and this oil is probably what furnished friend Sibley the means to get on in fixing up this mountain, and making experiments in the way of agriculture and stock raising for the benefit not only of Pennsylvania but perhaps for the *great wide world*.

The letter below explains itself:

The Artichoke (or Big Thistle) of California.

Dear Father:

Your letter and article about the artichokes came Saturday. It is odd, but I was very much carried away by artichokes on our visit to California a year ago last March. They were in their prime then, and being plentiful and cheap around San Francisco I used to order one every day. Then cousin Amy served them every time we ate at her house. I thought they were the most delicious vegetable I ever tasted, but I find none of the rest of the family shares my enthusiasm for them. I like them boiled and then eaten hot dipped into mayonnaise dressing or melted butter. The leaves should be stripped back until you find some which are tender and then one leaf at a time should be pulled off, dipped into the dressing and eaten as far as it is tender. Toward the center of the artichoke the whole leaf may be eaten, and then at the base, after all the leaves are gone, is the delicious "choke." I had not known enough to eat that part until Amy's husband taught me that it is the best part.

They are grown to the best advantage around San Francisco where there are such frequent fogs, but they are often seen here in private gardens, altho I do not think they are raised commercially. Mr. Dye had a great many plants, and I saw the buds on them when they were all ready to pick. They retail here for about 25c apiece, altho once or twice they were to be found as cheap as 10c. We bought a few once at the latter price, but that is the only time we have tried them since coming here to live. I believe they are much cheaper around San Francisco. I think that article was probably true in all details. I will ask the Dyes if they cut their plants down at certain times of the year, but I am quite sure they do.

Constance Root Boyden.

1301 West Alhambra Road, Alhambra, Calif., Sept. 26, 1922.

Artichokes a Pest, Etc.

My good friends, I have devoted quite a lot of space to raising artichokes, and it would be no more than fair to give something on the other side, and so I submit the following from my long-time friend (a man who is surely *away up* in the agricultural world), the editor of the Rural New-Yorker:

> I am very sure that artichokes will become a pest if put into the ordinary garden or field, and given a fair chance. I got my first information about it from John M. Jamison, who formerly lived at Roxabell in your state, who was quite a well-known farmer and writer. I visited his place some years ago, and he showed me how the artichoke had chased almost everything off his farm.
>
> H. W. Collingwood, Editor.
>
> 333 West 30th St., New York.

In reply to the above I would say that for almost 50 years they have been saying the same thing about sweet clover; but now it is acknowledged to be one of the best plants, for filling silos for the dairyman, of anything known. (In this issue there is a report of 400 pounds of sweet-clover honey per colony.) From what I saw of artichokes at friend Sibley's place, for silage and for hay, if it is bound to "chase everything off the farm," as Collingwood has it, I would say, let it chase.*

Some years ago, through Gleanings I had quite a little to say about the "helianti" and artichokes; and in order to compare them I had quite a patch of each; and I spoke about them as honey plants because they were so densely covered with bees. When we decided there were too few of the helianti we gave them up. Of course they all went to seed; and the seed and tubers, by cultivation with the cutaway and other tools, were scattered all over the garden. The next spring I was greatly worried, and supposed, of course, they would keep coming; but when the excitement about artichokes started up this season I searched my garden over to see if I could not find a few plants for a further test. Not a plant can be found of either artichokes or helianti anywhere in the garden or in the borders of the garden, or in the neighbors' ground. They have been for years recommended for pigs; and somebody, after he had turned in his pigs and let them root over the ground most thoroughly, found the artichokes came up almost as thick as ever, and they have cut them up with cultivators so there were not "too many in a hill." Let me now digress a little.

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*In a letter from L. W. Lighty, of the National Stockman and Farmer, he says:

"I find all stock readily eat the plants, and sheep are very fond of them. It grows very readily and, if the soil is fertile, the foliage will be heavy, but in poor soil it will be very light. The plants left are in full bloom now and have tubers seemingly plentiful, but only on digging them will I know how the yield is. "L. W. Lighty."

Pittsburgh, Pa., Sept. 25, 1922.

A few years ago I was quite enthusiastic about sunflowers, but reluctantly dropped them. In the Farm and Fireside for last May was an article demonstrating beyond doubt that sunflowers are a great and profitable crop for the silo—at least in localities favorable for them. I have not space to give even extracts from that article, but below is the heading:

HOW WE FOUND THAT THE LOWLY SUNFLOWER IS A MILLION-DOLLAR CROP.

At this date, Oct. 10, I am sorry to report that my immature artichokes planted six weeks ago are not growing as they did on the start, probably because they were immature tubers; but some sunflower seeds planted side by side on the same day are now two feet high with leaves nearly a foot across.

A BUSHEL of Artichokes from One Hill.

Read the letter below I just received from Burbank:

> The French artichoke is a wonderful producer here on *good* soil with irrigation, producing usually about one bushel per hill; on poor sandy soil about one-fourth as much. In my new catalog you will find an artichoke of the tender type; that is, the *head* type (like those they raise along the coast here), which produces magnificent artichokes all through the summer and through the winter when there are not heavy frosts. This is a most *marvelous improvement* of the head artichokes in all respects. Luther Burbank.
>
> Santa Rosa, Calif., Oct. 5, 1922.

"The High Cost of Living."

During the past summer I have been having quite a few calls to give pioneer talks at various beekeepers' conventions, and, in stopping at hotels and restaurants, I have studied the much-talked-of "H. C. L." I have told you already that I always feel guilty when I am obliged to pay, say, a dollor for a single meal; and I always feel guilty likewise in paying $2.00 or more for a place to sleep. Either Ernest or Huber is with me; and all five of the dear children insist that in my old age I must not take any chances in either sleeping or eating in unsanitary premises. They insist that I must have a good, clean bed, good ventilation, and some kind of heat when the weather becomes chilly; and as I am in the habit when at home of taking a daily bath, this also, usually; and all together, it costs something. But when it comes to meals they agree that I can make choice of the few things that "a little old man" really needs, instead of paying a dollar or more for a meal of victuals. You know I have told you of Ernest's fashion of going to a good restaurant and having a few simple dishes that cost only a small sum.

Now, instead of finding fault I am going to tell you something that we can all thank the Lord for. On one of the finest streets in the city of Cleveland, Ernest took me into a restaurant only a few mornings ago. I think it is one of the best dining rooms I ever saw; but there were no tables—nothing but a long row of comfortable chairs, with each arm of the chair broad enough to make a fair-sized table. Very neat little placards announced the price of what they had for breakfast. Ernest indicated with his thumb one little card that read "Wheat cakes and sausage, 25 cents." There were four good-sized griddle cakes, light and fluffy, a little pitcher of maple syrup, and two links of excellent sausage, with two good-sized squares of butter. Altho I was hungry there were more of the delicious cakes than I thought best to eat. One link of sausage was all I cared for, and I did not need all of the excellent butter. Only 25 cents for a good big wholesome and delicious meal for a good strong man! Everything was scrupulously neat and clean. There was not a fly in the whole large room, and it made me think of the cars carrying crushed stone that I told you about up in Alpena. There was not a *waiter* in sight, and, of course, there was no tipping. By the way, Huber told me something a few days ago that I never knew before. He said if you would go into any city dining room and sit down at a little table you would be expected to "tip" the waiter. By the way, I have been opposed to this tipping business all my life. But if you sit down at the counter on a high stool where no waiter is needed except to hand over what you call for, there is no tipping. Some of you may ask about the drink—how about my regular glass of milk? I usually want a little fruit of some kind, and with my cakes and syrup I ordered a large baked apple with a good lot of delicious cream, which cost ten cents more; and so my entire splendid breakfast cost only 35 cents, and I think I could get along very comfortably with just about an even dollar for the three meals of the day, when I can strike good-sized towns where there are up-to-date restaurants.

At one place where we stopped for dinner when we were in a great hurry I asked what they could serve soonest. The waiter replied they could give us a regular "35-cent dinner" right on the instant. This 35-cent dinner was a very good meal—in fact, there were more things than *I* cared for.

Now, friends, when you are complaining about the high cost of living, do not forget to thank the Lord for what our restaurants, cafeterias, etc., are doing to give us good wholesome food, nicely prepared, many times in not only sanitary, but artistic, surroundings "for a small amount of money."

Classified Advertisements

Notices will be inserted in these classified columns for 50c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column, or we will not be responsible for errors. For special conditions on bee and queen advertising, please write us. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

J. J. Lewis, Edw. A. Reddout, Virgil Weaver, O. W. Bedell, Edgar Williams, J. J. Scott, C. H. Cobb, W. W. Talley, G. H. Merrill, Robt. B. Spicer, S. H. Hailey, J. H. Haughey Co., J. B. Hollopeter, W. H. Mays, Michigan Honey Producers' Exchange, G. A. Barbisch, J. P. Moore, Ohio Valley Bee Co., W. D. Achord, E. A. Simmons, A. H. Newman, N. Forehand, I. F. Miller.

HONEY AND WAX FOR SALE.

FOR SALE—White clover honey in 60-lb. cans—none finer. J. F. Moore, Tiffin, Ohio.

FOR SALE—Basswood mixed, also buckwheat in new 60-lb. cans. Bert Smith, Romulus, N. Y.

FOR SALE—Fine quality, raspberry-milkweed honey in new 60-lb. cans. P. W. Sowinski, Bellaire, Mich.

FOR SALE—3000 lbs. of white comb honey from alsike clover. Edward Wilson, Whittemore, Mich.

FOR SALE—White sweet clover in cases, two 60-lb. cans, 10c per lb., f. o. b. Joe C. Weaver, Cochrane, Ala.

FOR SALE—Comb and extracted white clover honey. Prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

FOR SALE—Clover extracted honey in new 60-lb. cans. 120 lbs. net, $15.00. A. J. Norberg, Spring Valley, Ill.

FINE quality, well-ripened white clover honey. 12½c per lb. New 60-lb. cans, two in case. J. G. Burtis, Marietta, N. Y.

FOR SALE—Send for sample of new clover-basswood honey in new 60-lb. cans. J. N. Harris, 502 W. Center, St. Louis, Mich.

FOR SALE—White, amber and buckwheat honey in new 60-lb. cans and 5 and 10 lb. pails. H. B. Gable, Romulus, R. D. No. 2, N. Y.

Wisconsin-Hassinger-Clover-Basswood-Extracted-Honey Qualifies superior flavor and density. E. Hassinger, Jr., Greenville, Wis.

WRITE for prices on a case or carload of new clover honey. Sample 10c. C. S. Engle, 1327 23rd St., Sioux City, Iowa.

FOR SALE—12,000 lbs. of choice white clover honey, well ripened, put up in new 5 and 10 lb. pails. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—Comb honey gathered from fall flowers, very nice. 20c per lb. by case. Write for quantity prices. C. C. Hoover & Sons, Andover, Ohio.

FOR SALE—Clover or buckwheat honey in new 60-lb. cans, by the case or ton. Woodward Apiaries, Clarksville, N. Y.

GOOD white honey. Tell us what you want. Price and sample on request. A. I. Root Co., 230 W. Huron St., Chicago, Ill.

FOR SALE—Clover, amber and buckwheat honey in 5-lb. pails and 60-lb. cans. C. J. Baldridge, Homestead Farm, Kendaia, N. Y.

FOR SALE—New white clover honey of the finest quality in 60-lb. cans and 5-lb. pails. Sample, 20c. A. S. Tedman, Weston, Mich.

CLA-FO-NY quality honey, clover, 2-60's $15; 15-5's, $11.50; buckwheat, 2-60's, $12; 15-5's, $9.75. Sample, 15c. Clarence Foote, Delanson, N. Y.

FOR SALE—Fall honey, amber and dark, in standard cases. Price reasonable. Also 40 Demuth winter packing cases. H. E. Crowther, Jefferson, Ohio.

FOR SALE—Choice new clover extracted honey put up in new 60 lb. cans. Write for prices, stating quantity desired. W. M. Peacock, Mapleton, Iowa.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gal. barrels. Samples and price on request. A. I. Root Co., 23 Leonard St., New York City.

FOR SALE—No. 1 white comb honey, 24 sec. per case, eight cases per carrier, $5.50 per case f. o. b. Penfield. Also extracted honey. J. F. Coyle, Penfield, Ill.

FOR SALE—Extracted white clover honey, 12 5-lb. pails, $9.50; case two 60-lb. cans, $14.40: buckwheat, two 60's, $10.80. Seward Van Auken, Duanesburg, N. Y.

CLOVER honey in new 60-lb. cans, two cans to the case, 11c per lb. Buckwheat honey in barrels, 150 lbs. each, 10c per pound. Sample, 10c. R. V. Cox, Sloansville, N. Y.

HONEY FOR SALE—In 60-lb. tins, water-white orange, 13c; white sage, 12c; extra L. A. sage, 10½c; buckwheat, 10c, etc. Hoffman & Hauck, Woodhaven, N. Y.

PALMETTO HONEY, light in color, heavy in body. Flavor can't be excelled. In 53-gal. bbls. 9c a lb.; 10-lb. cans, $1.25 f. o. b. Punta Gorda. Sample 10c. F. H Nelson, Harbor View, Fla.

FOR SALE—North Michigan clover honey in new 60-lb. cans, two to a case, at 11c per lb. in 5-case lots. Prices on smaller lots on application also sample. J. H. Corwin, Merritt, Mich.

FOR SALE—White clover honey in 60-lb. cans and 5-lb. pails, this year's crop, none better. Write for prices. Sample, 10c. F. W. Summerfield, Waterville, Ohio.

FOR SALE—Very best clover basswood honey. Produced in new combs. Packed in new containers. 60-lb. cans and 5-lb. pails. Sample, 20c. Write for prices. A. C. Ames, Weston, Ohio.

RASPBERRY HONEY—In 60-lb. cans, 2 in a case for $14.40; one in a case, $7.50. Sample by mail, 20c, which may be applied on order for honey. Elmer Hutchinson & Son, Lake City, Mich.

OUR 1922 crop extracted honey is a very fancy grade, water white clover, which was left on the hives until thoroughly cured by the bees before extracting, making it very heavy bodied. This thick, rich honey is all packed in new 60-lb. cans, two to the case. Of course, we have to ask a little more for honey of this quality than ordinary honey. When in need of a good article send a dime for a sample and address your inquiry to D. R. Townsend, Northstar, Mich.

HONEY—Clover and buckwheat in 60-lb. cans and 10-lb. cans. Write for reduced prices. F. W. Lesser, Fayetteville, N. Y.

FINEST clover honey in 60-lb. cans, per case of 120 lbs. net, 15c lb. f. o. b. Malinta, Ohio, in 5-lb. pails, $1.20 each, prepaid in 3rd postal zone. No C. O. D. orders. C. J. Appeldoorn, Malinta, Ohio.

EXTRA quality white honey, $7.20 per 60-lb. can; 14c per lb. in 10-lb. cans on 6 or more cans. 10 lbs. prepaid, $2.00 in third zone, 20c extra each additional zone. Absolute satisfaction. F. W. Lesser, Fayetteville, N. Y.

FOR SALE—Finest quality white clover extracted honey, well ripened and of fine flavor, put up in 60-lb., 12-lb. and 2½-lb. cans, and 10 and 5 lb. pails. R. C. Ortlieb, 29 Van Buren St., Dolgeville, N. Y.

OUR 1922 crop of white clover extracted honey is now ready for the market. New cans and cases. Say how much you can use, and we will be pleased to quote you our very lowest price. E. D. Townsend & Sons, Northstar, Mich.

FOR SALE—Choice clover extracted honey in new 60-lb. cans and cases. Write for prices on carload or case lots; comb honey in Danz. and beeway sections. Packed in six or eight case carriers. Quality unexcelled. J. D. Beals, Oto, Iowa.

HONEY—Best quality clover or buckwheat, 12 5-lb. pails. $9.00 at our station; 2 60-lb. cans, $15.00. 5 lbs. delivered within third zone, $1.20; 10 lbs., $2.00, net weight. GUARANTEED ALWAYS RIGHT. Write for prices on larger quantities. Earl Rulison, R. D. No. 1, Amsterdam N. Y.

CHOICE extra fancy white clover honey in new 60-lb. cans, 120 lbs. net, $14.00. Sample, 20c. Write for prices on larger quantities. 100 cases extra fancy Hubam clover honey, same price. Also fancy comb honey, $5.00 per case 24 sections, 8 cases to carrier. Edw. A. Winkler, R. D. No. 1, Joliet, Ill.

FOR SALE—No. 1 white comb honey, $6 per case; No. 2 white comb, $5 per case of 24 sections; dark comb, dollar per case less; 24-case lots, 50c per case less. Amber and dark extracted, 10c per pound, two 60-lb. cans to case. Amber baking honey in barrels, 8c per pound. Discount on extracted in quantities. H. G. Quirin, Bellevue, Ohio.

FOR SALE—We can supply honey to beekeepers or other roadside sellers who may need to buy beyond their own supply, packed as follows: 2½-lb. friction top tin cans, 1 dozen in case; 5-lb. friction top tin cans, ½ dozen in case; 10-lb. friction top tin cans, ½ doz. in case; 60-lb. square cans, 1 to case; 60-lb. square cans, 2 to case. We have the following kinds of honey: Standard white, alfalfa, sweet clover, California sage, California orange, light amber, amber. Write for prices. The A. I. Root Co., Medina, Ohio.

HONEY AND WAX WANTED.

WANTED—Honey, bulk comb, section and extracted. O. D. Gosnell, Coalmont, Ind.

WANTED—Comb and extracted honey. Fancy yellow wax. C. J. Morrison, 750 Cottage Grove Ave., South Bend, Ind.

WANTED—Honey, basswood or light amber in bulk. Send sample. Quote price. Walter S. Knight, Dravosburg, Pa.

WANTED—Honey in ton lots or less. Comb, and white to amber extracted of good flavor for bottling. Send sample and price to S. G. Crocker, Jr., Roland Park, Baltimore, Md.

WANTED—Honey in ton lots, comb and extracted of all kinds. Send sample. State price. Joe Mlinarits, 8927 Keller St., Detroit, Mich.

WANTED—Comb and extracted honey, carload and less. All kinds of honey and beeswax for sale. Walter C. Morris, 105 Hudson St., New York.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa, Council Bluffs, Iowa.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

OLD COMBS WANTED—Our steam waxpresses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1922 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Ill.

FOR SALE.

FOR SALE—7 winter packing-cases, A-1 condition. D. C. Gilham, Schuylkill Haven, Pa.

POWER circular rip and cutoff hive-making saw, $35. Clarence Foote, Delanson, N. Y.

HONEY LABELS—New design. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE—"SUPERIOR" FOUNDATION. "quality unexcelled." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

PORTER BEE-ESCAPES save honey, time and money. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

WORTH $$$ to you. Make your own frames. Save one-half. Non-sag thin top-bar. New feature. Sample, 10c. D. S. Hall, Marshfield, Vt.

FOR SALE—At a bargain, 200 Texas aluminum honeycombs, new. 50 aluminum honeycombs, slightly used. L. L. Forehand, Ft. Deposit, Ala.

FOR SALE—Hubam clover seed grown in rows and kept perfectly clean, therefore absolutely pure. 50c per lb. f. o. b. Holgate, Ohio. Noah Bordner, Holgate, Ohio.

FOR SALE—Good second-hand 60-lb. cans, two cans to case, boxed, at 60c per case, f. o. b Cincinnati. Terms cash. C. H. W. Weber & Co., Cincinnati, Ohio.

FOR SALE—A Given foundation press, size 9 x 15 inches, in as good condition as if new. Also 50 or 60 swarms of bees and a lot of surplus hives and combs. Lyman Reed, 25 Vosberg St., Ilion, N. Y.

OPPORTUNITY, nearly new factory building, fully equipped for manufacturing beekeepers' supplies. Building is 40 x 70 feet, besides engine room, two story, electric lights, steam power and heat, on main line D. L. & W. and Rochester Division of Erie. Owners will sell at bargain and on right terms, as have no use for it, being engaged in other business. Communicate with Gledhill & Putnam, Inc., Avoca, N. Y.

WANTS AND EXCHANGE.

WANT good used Barnes saw table, saws and dado-head. A. J. Heard, Bonaire, Ga.

WANTED—Foundation mill. Rolls must be in perfect condition. The Stover Apiaries, Mayhew, Miss.

WILL exchange bees and queens for an automatic twelve-gauge shotgun. Oscar Mayeux, Hamburg, La.

WANTED—Comb-back chairs, also old rockers and chests with drawers. John Rick, 434 Oley St., Reading, Pa.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

BEESWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade price, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

WANTED—Beeswax. We are paying 1c and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address so we can identify it immediately upon arrival, and make prompt remittance. The A. I. Root Co., Medina, Ohio.

BEES AND QUEENS.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

FOR SALE—18 stands of good Italian bees. Mrs. M. E. Andress, Larned, Kan.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

GOLDEN Italian queens, untested, $1.00; six, $5.00. E. A. Simmons, Greenville, Ala.

EIGHT colonies of Italians. Wired frames, $50.00. W. J. Hussey, Mt. Pleasant, Ohio.

FOR SALE—100 colonies bees. For particulars, write John Haney, Dodge City, Rt. B, Kan.

SEE our ad and prices on page 777. Loveitt Honey Co., 602 N. 9th Ave., Phoenix, Ariz.

FOR SALE—Eight colonies bees. 8-frame hives, plenty stores. No disease, $5.00 each. Quincy Hart, Gentryville, R. F. D., No. 1, Ind.

LATE QUEENS—For late queens send me the order. Pure three-band Italians. No disease. Low prices. D. W. Howell, Shellman, Ga.

FOR SALE—150 colonies bees, 20 acres fertile Florida land in tupelo belt, fine location, climate, equipment. Cheap. W. I. Keiter, Cherrydale, Va.

"SHE-SUITS-ME" queens, line-bred Italians, $1.50 each; 10 to 24, $1.30 each. See back cover of January number. Allen Latham, Norwichtown, Conn.

GOLDEN Italian queens for sale. One queen, 90c; 6 queens, $5.00; 12, $9.00; 100, $65.00. Safe arrival and satisfaction guaranteed. J. F. Rogers, Rt. 3, Greenville, Ala.

QUEENS—For summer and fall. Write for prices and guarantee, state quantity desired and when shipment wanted. I can fill your orders. J. L. St. Romain, Hamburg, La.

FOR SALE—300 colonies of Italian bees in Root hives. Also 20 acres of land, good dwelling, located in one of the best bee sections in the country. Will take $2000 for property, and $8.00 a colony for the bees. Will sell as many colonies as party wishes. Good terms, part cash. John Griffith Co., Floresville, Texas.

WE are booking orders now for spring delivery for the famous "Colorado Queens." Send your order early so as to be sure to get your queens. C. I. Goodrich, Wheatridge, Colo.

POOLE'S three-banded Italian queens are guaranteed to arrive safely and give satisfaction. Untested, 80c each; 25 or more, 75c; tested, $2.00. Rufus Poole, Greenville, Ala.

I AM booking orders now for next spring delivery, 3-frame nuclei and queens at the same price as this year. Caucasian or Italian race. Peter Schaffhouser, Havelock, N. C.

BEES BY THE POUND — Also QUEENS. Booking orders now. FREE circulars, giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas, E. B. Ault, Prop.

GOLDEN QUEENS that produce large beautiful bees, solid yellow to tip, very gentle and prolific. Untested, $1.25 each; select tested, $3.00 each; breeders, tested, $5.00. Dr. White Bee Co., Sandia, Texas.

FOR SALE—Leather-colored Italian queens, tested, until June 1, $2.50; after, $2.00. Untested, $1.25; 12, $13.00. ROOT'S GOODS, ROOT'S PRICES. A. W. Yates, 15 Chapman St., Hartford, Conn.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, $1.00 each; $10.00 per dozen; $75 per 100. Pure mating, safe arrival and satisfaction guaranteed.

FOR SALE—Bees, 1 to 50 colonies, no disease. Supers and complete hives, foundation, if wanted, and a number of other bee supplies. Send your order. 8-frame supplies. Will sell for best offer. Hickory Shade Apiary, Otterville, Mo.

FOR SALE—85 colonies of bees in standard eight and ten frame hives. The hives are practically new. Also bee-house, smoke-house, capping-melter, honey-tanks, wax press, extractor, etc. John Santens, Box 176, Hazelhurst, Pa.

BRIGHT ITALIAN QUEENS—$1.00 each. 10% less in dozen lots. Pure mating, safe arrival and reasonable satisfaction guaranteed in U. S. and Canada. Write us for prices on packages bees. We have them in season. Graydon Bros., Rt. 4, Greenville, Ala.

LET me save you money on your 1923 package bees, nuclei and queens. Book early and not be disappointed. Queens balance of season, 85c; 6 or more, 65c; after Oct. 20, $1.00 straight. Everything guaranteed. J. L. Morgan, Tupelo Honey Co., Columbia, Ala.

PACKAGE BEES for 1923—Italians, $2.00 per lb. Tested queens, $1.50 each. Frames of brood, $1.50 each. Mixed stock, 10% discount. Liberal discount for large orders or late shipments. No disease. T. W. Livingston, Norman Park, Ga.

IF you're in the market for bees for April, May or June, 1923, delivery, write me, no matter how large or small your wants are. I can save you money and deliver you the goods. Let me hear from you. Emile J. Beridon, Jr., Mansura, La.

FOR SPRING DELIVERY, 1923—Italian bees and queens, equal to any, in 2-lb. packages, with queen, $4.00. 2-lb. package, no queen, $3.00. No disease. Health certificate with each shipment. Satisfaction guaranteed. Now is the time to have your order booked. J. L. Leath, Corinth, Miss.

PACKAGE BEES—2000 big, strong, healthy colonies will be ready to supply PACKAGE BEES in the spring. Italian or Carniolan QUEENS. Let me quote prices and book your order early. A small deposit reserves shipping date. Circular free. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

FOR SALE—50 colonies or more of Italian bees in 10-frame L. hives and wired combs. Woodward Apiaries, Clarksville, N. Y.

FOR SALE—100 colonies of Italian bees. Good reason for selling. No disease. Write for particulars. Wm. C. Rinehart, Mt. Aetna, Pa.

FOR SALE—1000 colonies bees, 10-frame Langstroth hives, fully equipped for comb and extracted honey, auto truck, big warehouse, located at Laurel, Montana, one of the best honey-producing sections in Montana; $7.50 per colony, with or without locations. Weber Brothers Honey Co., Blackfoot, Idaho.

ITALIAN BEES—Brood and young queens for delivery April 15 to June 15. One frame emerging brood and bees, one extra pound of bees, one young Italian queen, all for $5.00, 25 or more, $4.75, 50 or more, $4.50. Bright three-banded stock only, no disease, safe arrival and satisfaction guaranteed, 25% deposit to book order. R. S. Knight, R. F. D No. 2, New Orleans, La.

PLACE your early orders now for queens and package bees. Golden Italian and Caucasian queens, April 1 to May 15, 1923. Untested, 1, $1.50; 12, $15.00; 25, $1.00 each; 2-lb. package bees, $5.00; 3-lb. package, $6.50; 20% off above prices after May 15. Golden Italian breeders, $15.00 to $20.00. Safe arrival guaranteed. Terms, 25% with order. Sarasota Bee Co., Sarasota, Fla.

PACKAGE BEES—Now booking orders for spring delivery; superior Italian queens and bees, three-banded, leather-colored; thoroughbred; specialty of 3-frame nuclei with queen, $6.50 each; 25 per cent books order, balance payable just prior to shipment; satisfaction and safe arrival guaranteed. Ten or more nuclei with queen, $6.00 each. C. M. Elfer, St. Rose, La.

PACKAGE BEES FOR 1923—Three-band Italians, bred for business. A 2-lb. package of the Yancey hustlers with a select untested queen for $5.00; 25 or more, $4.75 each. Attractive prices on large lots. One-fifth cash books your order. Order early and make sure of shipping dates. We do not accept more orders than we can fill promptly. Caney Valley Apiaries, Bay City, Texas, Yancey Bros., owners.

AFTER 30 years in the bee business, I wish to retire and offer my entire lots of bees, 2100 colonies, well located, in the alfalfa and sweet clover district. Free from disease, equipped for comb and extracted honey. Also a modern fire-proof wareroom, 40 x 60, also a modern 7-room house, oak floors throughout, hot water heat and full basement. All located on Main street adjoining the business district, paved streets. Part cash, balance terms to suit. Bert W. Hopper, Rocky Ford, Colo.

FOR SALE, 1923. PACKAGE BEES—All bees are shipped on standard Root frame, emerging bees with honey, April 25 to May 30. 2-lb. package three-banded Italians, $5.50; 3-lb. package, $6.50; 4-lb. package, $7.50. June 1 to 30th: 2-frame nuclei with untested queen, $5.00; 3-frame, $6.00; 4-frame, $7.00. An untested queen with each package or nucleus. Safe delivery guaranteed, free from any contagious bee disease. Certificate will accompany each shipment. No shipment of bees by parcel post. Send 15% to book order. A. J. Lemoine, Moreauville, Box 55, La.

BOOKING ORDERS FOR MAY DELIVERY, 1923—My introduced-laying-enroute queens and packages, one good, vigorous, young queen, 1 standard Hoffman frame of emerging brood and adhering bees, and 1 additional pound of bees; price, complete, f. o. b. Bordelonville, $5.00. Additional frames of brood or additional pounds of field bees to make larger packages, $1 each respectively in above package. Bees and queen Italian. Queens introduced and laying enroute to you. Health certificate attached. Safe arrival and satisfaction guaranteed. One-fifth cash books order. Send for circular and names of satisfied customers in your state. Complete references given. Jes Dalton, Bordelonville, La.

FOR SALE—Bright Italian queens, 1, $1.00; 12, $10.00; 100, $75.00. Safe arrival guaranteed. T. J. Talley, Greenville, R. D. No. 3, Ala.

MISCELLANEOUS.

OLD TIME wool socks, home knit, ribbed; black, blue, slate, grey, green heather. Single pair, 75c; three pairs, $2.00, prepaid. Mrs. Geo. M. Jeffus, Crockett, Texas.

THE BEE WORLD—The leading bee journal in Britain, and the only international bee review in existence. It is read, re-read and treasured. Will it not appeal to you? Specimen copy free from the publishers. The Apis Club, Benson, Oxon, England. Send us a post card today. It is well worth your little trouble.

MEDICINAL roots and herbs are very profitable to grow. We especially recommend growing Golden Seal which with good care will yield as high as $10,000 per acre for each crop. It takes several years to mature but will average $1000 a year. Special Crops, a monthly paper, tells how. Sample copy, 10c. $1.00 per year. Address Special Crops Pub. Co., Box "G," Skaneateles, N. Y.

HELP WANTED.

WANTED—On a large farm, a man of energy and experience to take full care of bees, and during season of the year when bees do not require attention to do other work. Home apiary is on a state road and bee man must be a person of good address and a good salesman, neatness and accuracy essential. Records of colonies kept. Salary $20.00 per week. Good house equipped with running water, furnace and electric light fixtures, rent free. Do not apply unless you would be interested in developing the business and would come intending to stay. Address Mount Hope Farm, Williamstown, Mass.

TRADE NOTES.

Inasmuch as we expect to discontinue listing the following articles in our general catalog we are offering them at a big reduction in order to close out present stock:

14	C472802—Root capping-melters, price each	$12.00
15	C472803—Dadant uncapping-cans, price each	13.00
14	C472808—Boardman solar wax-extractors, price each	19.00
50	C271801—Demuth winter cases complete, nailed, slightly shopworn. Price each.	.50
60	C261602—Metal top telescope cap covers with inner cover, 8-frame, K. D., price each	1.50
80	C262606—Metal top telescope cap covers with inner cover, 10-frame, K. D., price each	1.60
3	C261601—Metal top telescope cap covers with inner cover, 8-frame, nailed and painted, price each	1.90
2	C262601—Metal top telescope cap covers with inner cover, 10-frame, nailed and painted, price each	2.00
4	C271701—Dovetailed winter cases, 8-frame with wood cover complete, nailed and painted, price each	2.75
1	C271702—Crate of 5 dovetailed winter cases, 8-frame, with wood cover, complete, K. D., price per crate	6.25
2	C492001—One and one-half horse-power Busy Bee gasoline engines. Price each	35.00
4	one-half-inch honey pumps. Price each, complete with fittings, $7.00; complete without fittings	5.00
6	C499121—Dadant electric wire imbedders. Price, each	.75
80	Bee Models—The Anatomy of the Bee price, each	.25

100 lbs.	C490561—Crate staples, 1½ x ¾-inch, price per pound	.12

In addition to the above bargains we have in stock 5000 second-grade Hoffman frames standard size 9⅛ x 17⅝, packed in cartons of 100 only which we offer at the special price of $5.00 per hundred as long as present stock lasts. Sample sent on request.

Above prices are strictly net f. o. b. Medina, Ohio.

For Shipment from Norfolk, Va.

62	C272702—Dovetailed winter cases, 10-frame with wood cover complete, K. D., price each	$ 1.40

For Shipment from New York City, N. Y.

13	C272701—Dovetailed winter cases, 10-frame with metal cover, nailed and painted. Price, each	2.50
12	C272702—Dovetailed winter cases, 10-frame with metal cover, K. D. Price each	2.10
50	C272703—Dovetailed winter cases, 10-frame, with metal cover, K. D. price per crate of 5	10.00
17	C271701—Dovetailed winter cases, 8-frame, with metal cover, nailed and painted. Price, each	2.25
6	C271702—Dovetailed winter cases, 8-fr., with metal cover, K. D. Price each	2.00
45	C271703—Dovetailed winter cases, 8-frame, with metal cover, K. D., in crates of 5 Price per crate	9.50
56	C271803—Demuth winter cases, K. D., price per crate of 5	2.50

Send all orders for the above direct to The A. I. Root Company, Medina, Ohio.

MOVED

To Larger and More Convenient Quarters.

Still Distributing

"ROOT QUALITY"

BEE SUPPLIES

Full Stocks *Prompt Service*

A. I. ROOT CO. OF NEW ORLEANS

2042 Magazine Street

New Orleans, La.

Almacen de exportación para México y Centro America.

Compramos miel y cera de abejas.

Correspondencia en castellano.

PATENTS Practice in Patent Office and Court. Pat. Counsel of The A. I. Root Co.

CHAS. J. WILLIAMSON,

McLachlan Bldg., Washington, D. C.

INDIANOLA APIARY offers Italian Bees and Queens for following prices: Untested Queens, $1.00 each; Tested Queens, $1.50 each. Bees, per lb., $2.00. Nucleus, $2.00 per frame. No disease. Bees inspected.

J. W. SHERMAN,

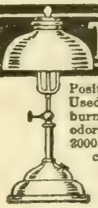
Valdosta, Georgia.

BEEKEEPERS' SUPPLIES.

The kind you want and bees need. Good stock of the A. I. Root Co.'s make of goods on hand. Catalog free. Beeswax wanted.

ALWAYS ON TOP

J. NEBEL & SON SUPPLY CO., High Hill, Mo.



The "BEST" LIGHT

Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog. AGENTS WANTED EVERYWHERE.

THE BEST LIGHT CO.

306 E. 5th St., Canton, O.

BARNES' HAND & FOOT POWER MACHINERY

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

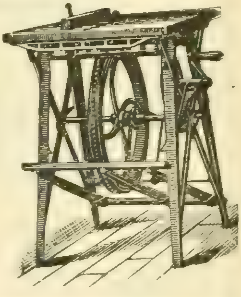
Machines on Trial

Send for illustrated catalog and prices.

W. F. & JOHN BARNES CO.

545 Ruby Street

ROCKFORD, ILLINOIS.



Special Notices by A. I. Root

Off for Florida; Artichokes.

My daughter, Mrs. Calvert and I are planning to start for Florida on election day, Nov. 7. You see I want to be sure to get in my vote in order that not only Ohio, but the United States and the whole wide world may have milk and honey instead of "beer and wine," and in order that our own beloved land as well as other lands may be "a land flowing with milk and honey," and that they may also be lands of peace and good will—lands of "peace on earth and good will to man."

Just one thing more: If any of our good Florida people can give me facts in regard to artichokes in Florida, by all means let me have them. If they get a whole bushel of tubers from a single hill of artichokes in California (see page 736), why can not we do the same thing in Florida? Address me as usual, during the winter time, at Bradentown, Fla. If you want a prompt answer, enclose an *addressed* postal card.

Fiftieth Anniversary.

With our next issue, Gleanings rounds out *fifty years*. We want the names of subscribers, if any, who have had it from "Vol. 1, No. 1," for our Jan. 1st anniversary number.

If You Love Flowers Read My Special Offer

A Splendid Collection of Early Spring Bulbs 48¢

This is simply to introduce our wonderful stock of bulbs—just received from Holland—and to acquaint you with our service and high business standards. These bulbs are strictly first-grade stock, big, hardy. *But they must be planted this Fall.* Upon receipt of 48c—stamps or money order—I'll send you by parcel post, prepaid, your choice of one of the following collections:

1. **Half dozen delicately fragrant hyacinths, or**
2. **One dozen lasting and brilliant red tulips, or**
3. **One dozen ever popular yellow daffodils, or**
4. **One dozen dainty paper-white narcissus for indoor decoration, or**
5. **Two dozen white crocuses that peep through the ground even before the snow is gone, or**
6. **A mixed assortment of each.**

Make your selection and order *now*. I've hundreds of other kinds, too. Also fruit, shade and evergreen trees, and bush fruits. Priced remarkably low. Free catalog.

T. J. DINSMORE, President,
The Progress Nurseries,
3302 Peters Ave., Troy, Ohio.

JUST AN

HONEST MARKET

FOR YOUR

RAW FURS

Price List ready November 20.

I solicit your shipments with the understanding that I will either satisfy you with returns or pay all transportation and return your own goods.

GEO. E. KRAMER
VALENCIA, PA.

ONE, TWO AND THREE FRAME NUCLEI

During April, May and June, 1923, we will ship nuclei with young 3-banded Italian queens, on combs of honey and brood from our yards at Moultrie, Ga., or from Bradentown, Fla., where all queens will be reared, since here mismating is almost unknown.

Prices will be very low and will be arranged by correspondence. No diseases of any kind. No queens for sale only to our customers.

H. L. CHRISTOPHER
MOULTRIE, GA., OR BRADENTOWN, FLA.

HONEY

We just received several carloads of beautiful Honey. Roadside beekeepers and those supplying a family trade will do well to take advantage of these bargain prices:

In 60-lb. Tins—White Orange, 13c lb.; White Sage, 12c lb. Extra L. A. Sage, 10½c lb.

GLASS AND TIN HONEY CONTAINERS.

2½-lb. cans, crates of 100	$4.50
5-lb. pails (with handles) crates of 100	7.00
10-lb. pails (with handles), crates of 50	5.25
60-lb. tins, 2 per case, new $1.20 case; used 25c	

WHITE FLINT GLASS, WITH GOLD LACQUERED WAX LINED CAPS.

8-oz. honey capac., $1.50 per carton of 3 doz.
16-oz. honey capac., $1.20 per carton of 2 doz.
Qt. 3-lb. honey capac., 90c per carton of 1 doz.

HOFFMAN & HAUCK, INC.
Woodhaven, New York

WE'LL SUPPLY YOU

BEE SUPPLIES

THAT ARE MADE TO SATISFY

Let us quote you prices before you place your order, and you will not be sorry.

Illustrated Catalog sent on request.

The best market prices for your beeswax.

WRITE TO

A. H. RUSCH & SON CO.

REEDSVILLE, WISCONSIN

Honey Containers

We have some interesting prices to offer on honey containers; send us a list of your requirements and let us quote you our prices.

2½-lb. cans in reshipping cases of 24 and crates of 100 and 500.

5-lb. pails in reshipping cases of 12 and crates of 100 and 200.

10-lb. pails in reshipping cases of 6 and crates of 100.

1-gallon square or oblong cans with 1¾-inch screw cap in boxes of 6.

1-gallon square or oblong cans with 1¾-inch screw cap in crates of 100.

60-lb. square cans with 1¾-inch screw cap in cases of 2 cans.

16-oz. round glass jars in reshipping cases of 2 dozen.

6½-oz. tin top tumblers in reshipping cases of 4 dozen.

Shipping cases for comb honey for any style sections in the 24-lb. or 12-lb. size.

Send for our catalog showing full line of Bee Supplies.

AUGUST LOTZ CO.

BOYD, WISCONSIN.

For 1923

Superior Italian
Queens
Full Colonies
Nuclei
Pound Packages

Cypress Bee Supplies

Hive-Bodies
Covers
Bottoms
Supers
Frames

We can furnish you the best of the above at a fair price. Let us quote you.

The Stover Apiaries
Mayhew, Miss.

Package Bees, Queens and Nuclei

Dollar a Pound

Package Bees a dollar a pound. Queens accompanying, one dollar additional.

NUCLEI—2-frame, $3; 3-frame, $4. Either Standard or Jumbo Langstroth.

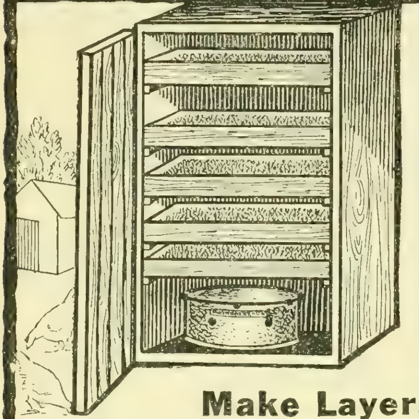
QUEENS—Untested, $1; Tested, $1.50. Breeders, $5.00, $10.00, $15.00.

These low prices are made on condition that orders are booked in time so we can prepare for them in the winter. **Send for circular.**

LOVEITT HONEY CO.

602 N. 9th Ave., Phoenix, Ariz.

Oat Sprouter $2.49



This home made oat sprouter was made in one evening by a fourteen-year-old boy with no tools but saw and hammer. The total cost, including stove for heating, was $2.49. Thousands of these sprouters have been made at home by poultry keepers and hundreds of letters in my files testify that it is the cheapest to make, the easiest to operate, and the handiest and best sprouter ever built.

To make hens lay abundantly in winter you must feed growing green food that is rich in vitamines. Sprouted oats furnish the best of such food at lowest cost.

Make Layers Out of Loafers

The Putnam Home-Made Oat Sprouter will supply better and sweeter sprouted oats with less fuss and dirt and work than any other sprouter made. I will send you, free, easily followed plans for building this oat sprouter together with a full description of the Little Putnam Stove with which it is heated. The price of the stove is $2. postpaid. Plans for building the Sprouter are packed with every stove, also instructions for using the stove to keep the water in poultry fountains from freezing.

You can't afford to be without this oat sprouter, even if you keep but eight fowls. Get a Little Putnam Stove from your dealer now. It will pay for itself many times before spring. Most dealers keep it. If yours does not, send me his name and $2. and I will send you the stove, postpaid. Try it and if you do not find it all I claim and are not perfectly satisfied, send it back in ten days and I will refund your $2. together with the postage for its return. I'll run all the risk.

I. PUTNAM
Route 1160-0 Elmira, N.Y.

Little
Putnam
Stove

$2.00 Post Paid

Burns a Month Without Attention

World's Best Roofing
at Factory Prices

"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofing, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Save money—get better quality and lasting satisfaction.

Edwards "Reo" Metal Shingles

have great durability—many customers report 15 and 20 years' service. Guaranteed fire and lightning proof.

Free Roofing Book

Get our wonderfully low prices and free samples. We sell direct to you and save you all in-between dealer's profits Ask for Book No. 183

LOW PRICED GARAGES

Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles.

THE EDWARDS MFG. CO.
1153-1183 Pike St. Cincinnati, O.

FREE Samples & Roofing Book

KITSELMAN FENCE

GET IT FROM THE FACTORY DIRECT

"Saved at Least $20," writes W. W. Fuller, Carmi, Ill. **You, too, can save** by buying direct at Lowest Factory Prices. **WE PAY THE FREIGHT.** Write today for Free 100-page Catalog of Farm, Poultry and Lawn Fence, Gates, Posts and Barbed Wire.

KITSELMAN BROS. Dept. 21 MUNCIE, IND.

66—Good—Magazines—$1

		Special Price
People's Popular Monthly	(One Year)	$1.00 FOR ALL FIVE
Illustrated Needlework	(Quarterly One Year)	
Pathfinder - -	(Weekly 6 Mos.)	
Mother's Magazine	(Monthly One Year)	
Fruit Garden & Home	(Monthly One Year)	

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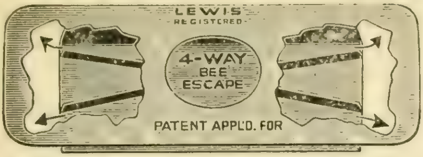
Union Bank Building, Chicago

LEWIS 4-WAY BEE ESCAPES



Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal. Price each 18c prepaid. Made by

G. B. LEWIS COMPANY, Watertown, Wis., U. S. A.
For Sale by All Dealers.

RHODE ISLAND REDS

Send for Remarkable FREE Book on the

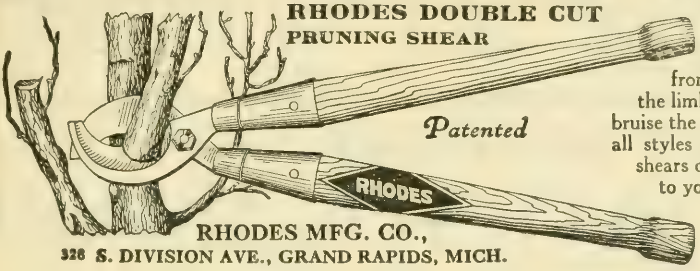
Best All Purpose Breed

They'll make you more money than any other poultry breed. Egg laying contests show Rhode Island Reds lay more winter eggs, larger eggs, than any other breed. They mature quick begin laying early. Rhode Island Reds combine egg **and meat** qualities in highest possible degree. Make best market fowls. Hens make excellent mothers. Most beautiful, most popular breed today. Ideal fowl for farm or city lot. We tell you where to buy.

Rhode Island Red Journal Only Journal in World devoted exclusively to Rhode Island Reds. **Tells how to make big money with them**—how to buy, sell, get greatest pleasure, most profit—everything you want to know about Rhode Island Reds. **Published monthly. 50c year—3 years $1.00.** **"Blue Ribbon Reds"** remarkable book tells how to judge, mate, cull, feed, prepare for show, linebreed, etc. **Given free** with 3-year subscription to Rhode Island Red Journal, at $1.00. **Send dollar bill today.**

Rhode Island Red Journal, 2533 Democrat Bldg., Waverly, Ia.

RHODES DOUBLE CUT
PRUNING SHEAR



THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door. Write for circular and prices.

RHODES MFG. CO.,
328 S. DIVISION AVE., GRAND RAPIDS, MICH.

1923--NUCLEI and A. I. ROOT BEE SUPPLIES--1923

One extra Pound of Bees With Each Nucleus and Shipped on Capped Brood.

Seventeen years of experience has taught us that a three-frame nucleus, if received before May 15, will gather a surplus crop of honey. With the extra pound of bees you are doubly assured of that fact, I would be pleased to have Beekeepers, who have become dissatisfied with pound packages and nuclei, to try our nuclei.
3-frame Nuclei of Italian Bees, with queen, $5.00 each. 3-frame Nuclei of hybrids, with Italian queen, $4.50 each. We guarantee safe arrival and free from disease and satisfaction.

> "To whom it may concern: I have this day, Sept. 22, 1922, completed the inspection of the yards of A. R. Irish and found them free from contagious bee diseases.—S. V. Brown, State Inspector of Apiaries."

A. R. IRISH, *Nuclei Specialist,* SAVANNAH, GA., BOX 134

BANKING BY MAIL AT 4%

A.T.Spitzer
PRES.
E.R.Root
VICE PRES.
E.B.Spitzer
CASHIER

THE BEST INVESTMENT

you can make is a Savings Account with the Savings Deposit Bank Company.

It earns 4% interest, and it is always ready for you at 100 cents on the dollar when you need it. Deposits received BY MAIL.

The SAVINGS DEPOSIT BANK CO.
THE HOME OF THE HONEY-BEE MEDINA, OHIO

RAISE GUINEA PIGS for us. We buy all you raise. Big profits—large demand—easily raised. Pay better than poultry or rabbits. Particulars and booklet how to raise **FREE.**
CAVIES DISTRIBUTING CO., 3145 Grand Ave., Kansas City, Mo.

"Best" Hand Lantern

A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. **Agents wanted. Big Profits. Write for Catalog.** THE BEST LIGHT CO.
306 E. 5th St., Canton, O.

ROOT QUALITY SUPPLIES

BEES AND QUEENS.

Authorized Distributor for St. Louis district.
Send for Catalog.
O. G. RAWSON, 3208 Forest Place,
East St. Louis, Ill.

PATENTS---TRADEMARKS

I offer prompt, personal and expert professional service. 10 years' experience. Write for terms. **LESTER SARGENT,** Patent Attorney, 524 Tenth St., N. W., Washington, D. C.

MASON BEE SUPPLY COMPANY,
Mechanic Falls, Maine.

From 1897 to 1922 the Northeastern Branch of The A. I. Root Company.

PROMPT AND EFFICIENT SERVICE

BECAUSE—Only Root's Goods are sold.
It is a business with us—not a side line.
Eight mails daily—Two lines of railway.
If you have not received 1922 catalog send name at once.

BEE CANDY Just what you want to use when you pack your bees this fall. This candy will save many colonies that are short of stores. Put up in large paper plates just right for your hive. Send for circular and price, also catalog of supplies.

H. H. JEPSON
182 Friend Street. Boston 14, Mass.

DON'T DELAY---GET OUR PRICES

WE SAVE YOU MONEY

"Falcon"

SUPPLIES --- QUEENS --- FOUNDATION

W. T. FALCONER MFG. COMPANY
FALCONER (Near Jamestown), NEW YORK.
"Where the best beehives come from."

QUEENS *Package Bees Nuclei* **QUEENS**

For years we have been shipping thousands of pounds of bees all over U.S.A. and Canada. Now is the time to place your order for spring. Send for our free 1923 circular. We can save you money by ordering early.

The Very Best of Queens and Bees.
ITALIANS — CARNIOLANS — GOLDENS.

Nueces County Apiaries
Calallen, Texas

Nov. 15 Is a Big Day

The Iowa Association is planning a series of meetings for Mid-western Beekeepers, in connection with the Mid-west Horticultural Exposition. Plan to enter an exhibit in the Exposition, for the list of cash and special prizes is one of the largest ever offered Beekeepers. Any Beekeeper who complies with the premium requirements may enter his display. And certainly, if at all possible, be in attendance at the

Mid-Western Beekeepers' Meeting

On Tuesday afternoon, a special program is being arranged for Producers. Wednesday morning Beekeepers are invited to meet with the Pomological Society, when Prof. S. H. Bailey, their president, will give an address. That afternoon the Beekeepers' Meeting will be held in the Root plant, where producers will be shown how Airline is bottled, how Airco Foundation is made, and Root Quality Goods assembled. We cordially invite all Beekeepers who will be in Council Bluffs that week, or in attendance Wednesday, to join us and the Iowa Association in a meeting of Beekeepers, and for them

A Program of Interest

Plant Inspection—1:15 to 2:00 P. M.

F. B. Paddock, Ames, Iowa—''What is the Future of Beekeeping in the Mid-West?''

W. A. Jenkins, Shenandoah, Iowa—''Sweet Clover in the Middle West.''

H. C. Cook, Omaha, Nebr.—''Selling Honey Profitably.''

W. A. Walker, President of the Iowa Beekeepers' Association, Iowa Falls, Iowa—''The Association's Relationship to Better Beekeeping.''

General Discussion—Led by Chas. Gaydou, Secretary of the Nebraska Beekeepers' Association, Blair, Nebr.

Refreshments.

H. H. Root, Medina, Ohio—Subject, ''The Greatest Menace to Beekeeping.''

RESERVE THE DATE AND JOIN US WEDNESDAY, NOV. 15, 1922.

Premium lists of honey and cash and cash prizes will be sent upon request.

THE A. I. ROOT COMPANY OF IOWA
COUNCIL BLUFFS, IOWA

NEW PRICES

On Friction Top Cans and Pails

	25	50	100	200	500	1000
2½-lb. cans	$1.15	$2.15	$4.10	$7.75	$18.75	$36.00
5 -lb. pails	1.90	3.50	6.50	12.00	28.25	55.50
10 -lb. pails	2.75	5.00	9.50	18.00	43.00	83.00

All packed in fibre containers. They keep neat and clean till you use them. Prices F. O. B. cars Lansing and not from some distant shipping point.

Send in Your Order

1-Pound Round Jars

White glass and lacquered screw caps packed in re-shipping cases of 24 each. Priced as follows:

Each	$1.30
10 Cases	12.00
50 Cases	57.50

F. O. B. cars, Lansing, Mich.

2-Pound Round Jars

White glass and lacquered screw caps. Packed in re-shipping cases of one doz. each. Priced as follows:

Per Case	$ 1.20
10 Cases	11.50
25 Cases	27.50

F. O. B. cars, Lansing, Mich.

6-Ounce Tumblers

White glass and lacquered slip-on caps. Packed in re-shipping cases of 48 each. Priced as follows:

Per Case	$ 1.45
10 Cases	14.00

F. O. B. cars, Lansing, Mich.

A Grade Tin Paste

Just what you want for attaching labels to tin and glass containers. It sticks. Prices as follows:

One Pint	25c
One Quart	45c
One Gallon	$1.50

Postage extra.
Remember, IT STICKS.

Send in Your Order

M. H. HUNT & SON
510 North Cedar Street LANSING, MICHIGAN

An Open Letter to the Honey Producers of the United States

Costs entering into the manufacture, sale and distribution of Lewis ''Beeware'' on which our 1923 prices will be based would, in any other year, have prompted an increase in price over 1922.

Realizing that honey is largely produced by agriculturists, we know that the selling price of your product has decreased since last year, in the face of rising costs to you of many manufactured goods you use in the pursuit of your business.

For that reason we are going to be satisfied for 1923 with a smaller profit than is ordinarily due us in the course of business, and not make any material increases in the 1923 catalog, absorbing some losses ourselves for the present.

It is our hope that lumber, which has increased nearly 30 per cent since 1922 prices were figured, will not keep on climbing in price. Labor in our plant has been reduced as much as possible under existing circumstances, and we have installed every device known to mechanical science to reduce our manufacturing costs.

Should lumber and our other costs continue to rise, an increase in the retail price of Lewis ''Beeware'' will be necessary some time during 1923. This will be avoided if physically possible. There is now not the slightest indication of any possibility of price decrease during the coming season, so far as we can see. Of course we expect to pass on such opportunities to our patrons when possible.

We are heartily in favor of co operative buying where a stock of goods is kept on hand and dealer service given. To that end associations buying in carlots will be made carlot prices. The cost of distribution to us makes it impossible to allow large discounts for purchase of less than carlots without an increase in the retail prices for 1923, which would be unfair to the great body of beekeepers who buy direct from our branches or dealers.

We will continue, as in the past, to do everything within our province to further beekeeping, increase honey production and honey selling opportunities, to appear before the Classification Committee for lower rates on honey, to contribute to the financial welfare of National and State Associations and to keep up the quality of ''Beeware'' so it will continually be worth more than it costs.

Would you like to receive a free copy of the 1923 Beeware Catalog? If so, drop us a post card.

G. B. LEWIS COMPANY

G. C. LEWIS, President.

At the Home of ''Beeware,''
Watertown, Wisconsin, U. S. A.
November 1, 1922.

Root
QUALITY

Why 1923 Will Be a Root Quality Year!

Since time immemorial, it has been demonstrated by countless examples that he who best serves his fellow man will, in due time, receive his just reward.

For the past fifty years The A. I. Root Company has been serving beekeepers in all parts of the world. By giving honest service and honestly made goods of high quality, The A. I. Root Company has won the esteem and good-will of thousands of beekeepers everywhere. This good-will on the part of their friends, the beekeepers, *is the greatest asset which The A. I. Root Company possesses.*

We intend to keep this good will intact during 1923!

With this end in view we have made but very little change in our prices for 1923. Although lumber prices are much higher, and are still advancing, we are keeping our prices down to last year's level wherever possible. We are able to do this because we were fortunate in having purchased considerable of our lumber for 1923 at a price lower than we would have to pay today. We are passing the advantage of this saving on to the beekeeper today, but we cannot guarantee these prices to last through the entire season.

The few slight increases that have been made are offset by the reductions on items such as sections, extractors, etc. The increased demand for Root sections and extractors has enabled us to reduce production costs because of the increased volume.

Production costs throughout the whole Root organization have been reduced to a minimum. Other expenses have also been cut down considerably. It should be borne in mind, however, that material costs form a large part of the total cost of goods, therefore, any severe upward fluctuation in lumber or material costs will necessitate advances in prices later in the season. Such advances, according to present indications and the recovery of business in general, are entirely possible.

The A. I. Root Company always has used and always will use its influence and every means at its disposal to further reduce freight rates on both honey and beekeeping equipment. This, of course, will be the policy for 1923.

The A. I. Root Company is also making greater efforts than ever before, not only to popularize the universal use of honey as a safe sweet, but to aid the beekeeper and honey producer in every way possible to dispose of his honey at the best market prices. This service is rendered through the Company's books and publications which rank the very highest of any in the world on bees and beekeeping subjects. An example of this service is the new free booklet recently published, "How to Sell Honey." It is yours for the asking. Have you secured your copy? If not, drop us a postal card today. Also ask for a copy of the handsome new 1923 catalog which will be ready in a few weeks.

THE A. I. ROOT COMPANY
WEST SIDE STATION, MEDINA, OHIO

"Fifty-two Years in the Bee Supply Business."

1922

Gleanings in Bee Culture

Vol. L. December, 1922. No. 12

Better Way to Garden

Don't do garden work the slow back-breaking way. You can grow a far better garden, easier and with much less time and work.

BARKER

WEEDER, MULCHER AND CULTIVATOR

THREE MACHINES IN ONE

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Let us tell you about this machine and how to raise bigger, better gardens—make gardening a pleasure. A valuable book, illustrated. Gives prices, etc. A card brings it. Write us today. Use coupon below.

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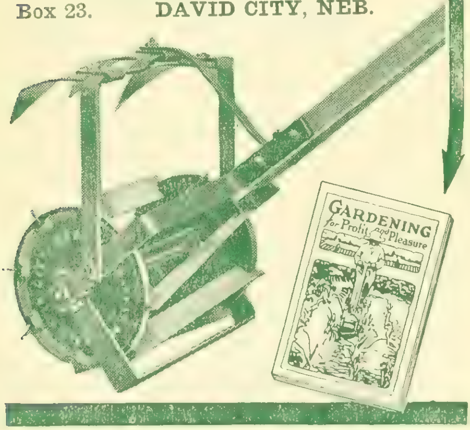
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Name ....

Town ....

State .... RFD or Box ....

Dear Mr. Beekeeper:

You are probably thinking of getting your next season's supplies so that you can get them made up while you are sitting by the fire this winter. With additional help and an extra large stock of Root Quality supplies on hand, we are prepared, as never before, to give the beekeepers of this territory the best possible service. Send us a list of your next season's wants and let us quote you prices.

A. I. Root Company
of Syracuse, N. Y.
1631 West Genesee St.

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TIN CANS
FIRST
For PACKERS and MANUFACTURERS of FOOD PRODUCTS
LARGE CAPACITY
LONG EXPERIENCE
YOUR INQUIRIES SOLICITED
W. W. BOYER & CO. INC.
BALTIMORE, MD.

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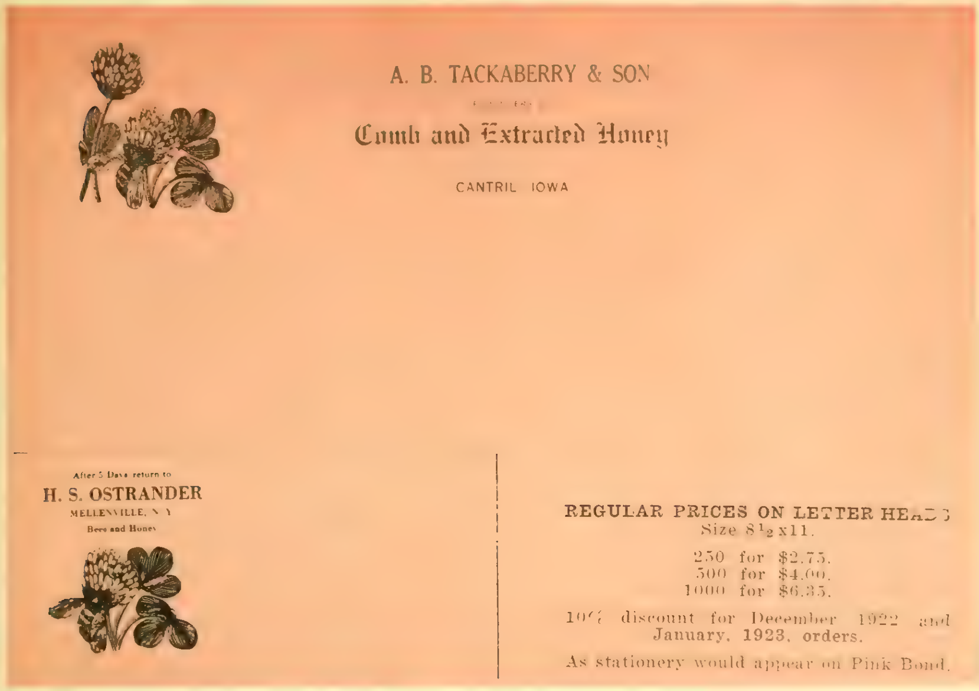
Nothing will give you better advertising or create a better impression of you than a neat letterhead. It is your traveling representative. We submit four samples in reduced size. You may have, for the asking, one of our sample books of stationery showing other styles of printing and colors of paper. **THE A. I. ROOT COMPANY, MEDINA, OHIO.**



A. B. TACKABERRY & SON

Comb and Extracted Honey

CANTRIL IOWA

After 5 Days return to
H. S. OSTRANDER
MELLENVILLE, N. Y.
Bees and Honey

REGULAR PRICES ON LETTER HEADS
Size 8½x11.

250 for $2.75.
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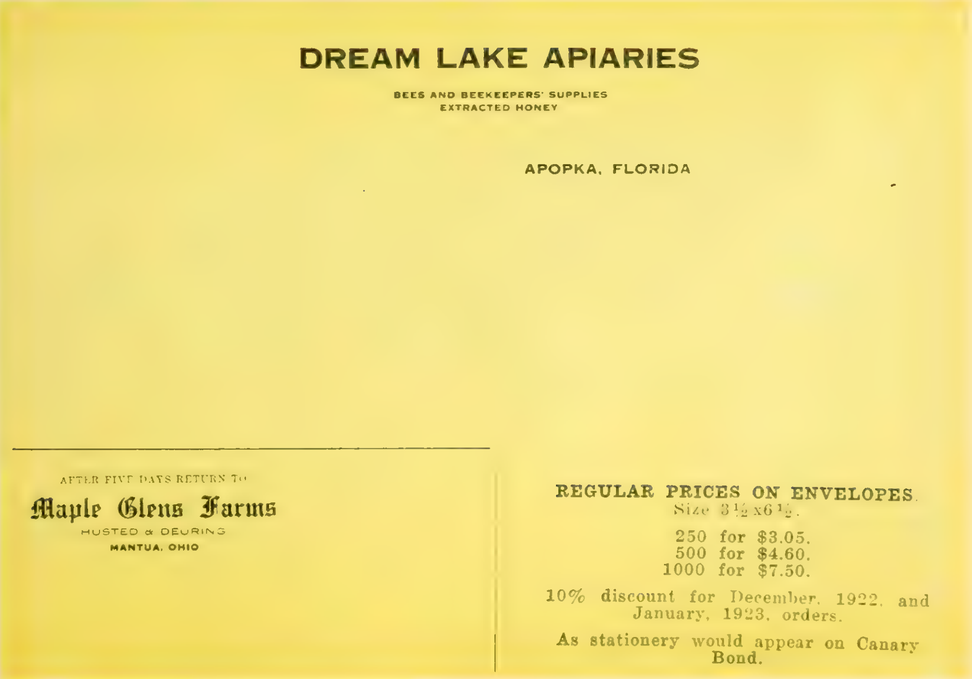
10% discount for December, 1922, and January, 1923, orders.

As stationery would appear on Pink Bond.



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BEES AND BEEKEEPERS' SUPPLIES
EXTRACTED HONEY

APOPKA, FLORIDA

AFTER FIVE DAYS RETURN TO
Maple Glens Farms
HUSTED & DEURING
MANTUA, OHIO

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Size 3½x6½.

250 for $3.05.
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1000 for $7.50.

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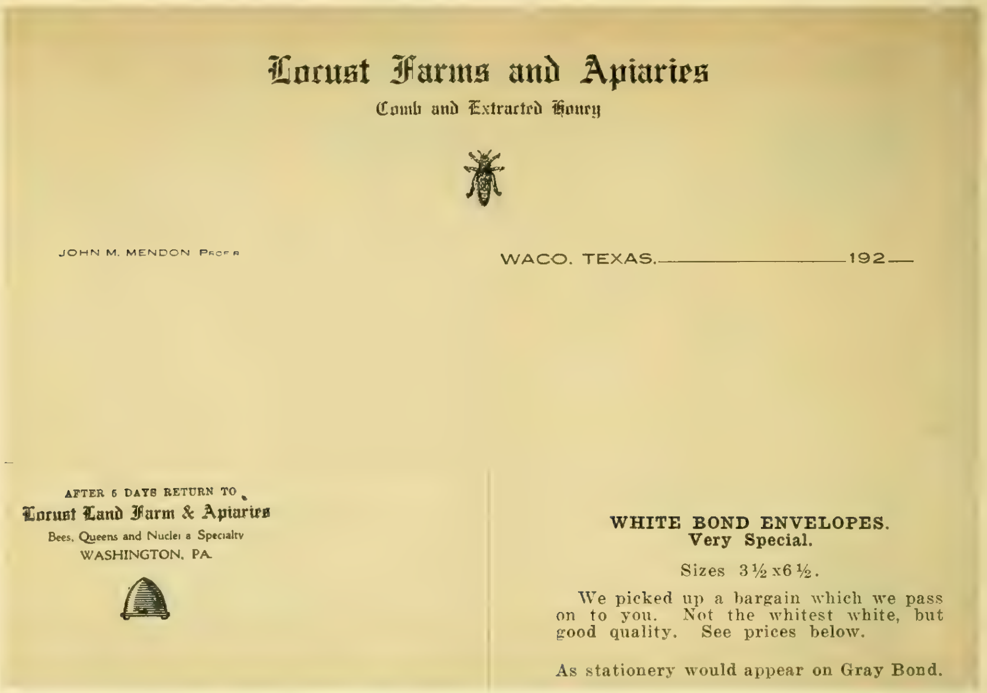
(See next page.)

YOU CAN SAVE MONEY

If you give us your order for stationery during the months of December, 1922, or January, 1923, we will give you a discount of 10 per cent from regular prices and the regular prices have been reduced, too. Select the color of paper you like and the style of printing. Envelopes to match. Never a better time to order than NOW.



Locust Farms and Apiaries
Comb and Extracted Honey

JOHN M. MENDON Propr

WACO. TEXAS.________________192__

AFTER 6 DAYS RETURN TO
Locust Land Farm & Apiaries
Bees, Queens and Nuclei a Specialty
WASHINGTON, PA.

WHITE BOND ENVELOPES.
Very Special.

Sizes 3½x6½.

We picked up a bargain which we pass on to you. Not the whitest white, but good quality. See prices below.

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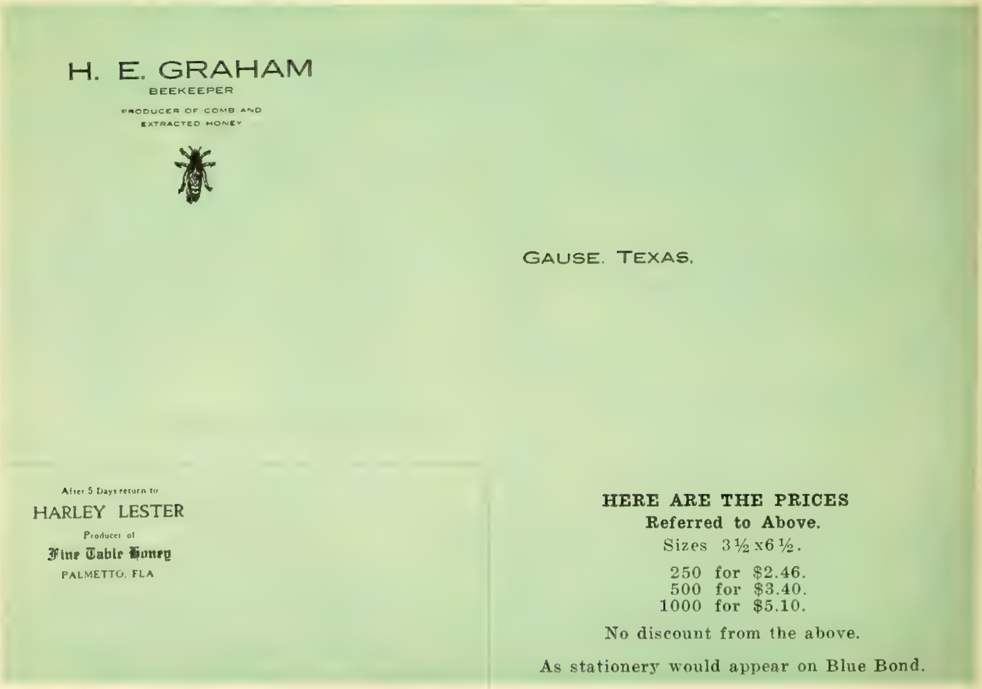

H. E. GRAHAM
BEEKEEPER
PRODUCER OF COMB AND
EXTRACTED HONEY

GAUSE. TEXAS.

After 5 Days return to
HARLEY LESTER
Producer of
Fine Table Honey
PALMETTO, FLA.

HERE ARE THE PRICES
Referred to Above.

Sizes 3½x6½.

250 for $2.46.
500 for $3.40.
1000 for $5.10.

No discount from the above.

As stationery would appear on Blue Bond.

THE A. I. ROOT COMPANY, MEDINA, OHIO.

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Entered as second class mail matter at the Postoffice at Medina, Ohio. Published monthly.
Space occupied by reading matter in this issue, 73.6 per cent; advertising, 26.4 per cent.

THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

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Editors	Editor Home Dept.	Assistant Editor	M'n'g Editor

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Root's Goods at factory prices with WEBER'S service. Send us a list of your wants and we will quote you prices that will save you money.

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Texas Beekeepers should write to A. M. Hunt, Goldthwaite, Texas.

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Several carloads, all sizes, just received at our Ogden, Utah and Idaho Falls, Idaho, warehouses. Quick service; lowest prices. Also comb honey cases, all kinds.

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(Manufacturers Weed Process "SUPERIOR FOUNDATION" and Dovetailed Beehives.)

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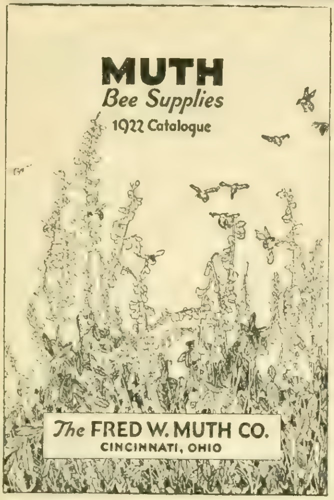

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Bee Supplies
1922 Catalogue

The FRED W. MUTH CO.
CINCINNATI, OHIO

You need our new 1922 bee supply catalog more than ever before. Have you received one? Many new articles are listed for the saving of labor and greater honey production. Our attractive prices, superior quality and prompt service will always be appreciated by beekeepers.

Send a list of your requirements to us.

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Pearl and Walnut Streets,
Cincinnati, Ohio.

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To Larger and More Convenient Quarters.

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BEE SUPPLIES

Full Stocks *Prompt Service*

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Correspondencia en castellano.

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Lewis-Markle Power Honey Extractor.
Tank cut away.
A—Pan over machinery. B—Bottom of tank.

Made in 4 and 8 frame sizes. Accommodates 2 sizes of baskets, power operation, machinery underneath, no vibration, tank and basket instantly removable for cleaning. A commercial success. Circular free. Address:

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Watertown, Wisconsin, U. S. A.
There's a Distributor Near You.

HONEY MARKETS

U. S. GOVERNMENT MARKET REPORTS.

Information from Producing Areas (First Half of November).

CALIFORNIA POINTS.—Southern California—Colonies in good condition. Market stronger and prices advancing since passage of tariff. Some small beekeepers selling rapidly, but larger factors holding for higher prices. Carlots range per lb. for outside shipment, white orange 10½-11c, white sage 9-9½c, light amber sage 7-7½c, light amber alfalfa 6¾-7c. Some sales to near-by dealers of white orange low as 9¾c per lb. and of white sage at 8-8½c. In central California alfalfa crop said to have been only a fraction of normal, due in part to army worms. Northern California.—Bees being moved into almond and prune orchards for winter. Fruit-growers offering high as $1.50 per colony for pollinating bloom. Star thistle honey generally sold at 8c, some 9c per lb. For dark honey beekeepers asking 6c. Brisk demand for 5 and 10 lb. pails.

INTERMOUNTAIN REGION.—Colonies generally packed, and in good shape for winter. Extracted honey moving slowly in carlots, and at wide range in prices. As carlot buyers have not been purchasing heavily, it is likely that carlot sales may be extended over a longer period than ordinarily prevails. Several carlot sales of white alfalfa and sweet clover reported in 60-lb. cans at 8¼-8½c per lb. Other carlot sales white extracted, for distant shipment and in sales to near-by firms, reported at 6¾-7½c per lb. Extracted honey has moved fairly well in local small-lot sales. Comb honey in carlots is said to have moved unusually well. In some sections comb honey is largely cleaned up. Carlot sales best No. 1 white reported at $3.75 per 24-section case; other carlot sales white comb, to near-by dealers, reported low as $2.60-3.00 per case. Average yellow beeswax ranges 20-25c per lb. cash.

ARIZONA-NEW MEXICO.—Drought in New Mexico said to have been instrumental in causing very light crop. In Arizona a slow fall flow gave enough surplus to extract some honey and still leave winter stores. Sales of several cars extracted reported at 6¼-6½c per lb. Most honey being held for better prices.

PACIFIC NORTHWEST.—Colonies have ample stores and bees except where spray poison and American foul brood have weakened them. Spray poisoning estimated to have caused loss of one-third of the crop in Yakima Valley. Honey moving rapidly from hands of beekeepers. Some large producers have crop over half sold. Carlot sales light amber reported at 8¼c and 9c per lb. Plenty of inquiries reported at 8c per lb.

EAST CENTRAL AND NORTH CENTRAL STATES.—Stores generally ample, but some colonies reported weak in bees. Late rains have helped clover, which in most areas is now in good condition for next year. Demand somewhat improved, but sales still light. Amber supply said to be light. Carlot basis for extracted white clover ranges 9-10½c per lb., with case lots selling at 12-15c. Retail prices in 5-lb. cans range 15-25c per lb. Aster reported selling in 60-lb. cans at 10c per lb. Few small sales white comb reported at $4.80-5.50 per 24-section case.

PLAINS AREA.—Most colonies strong in bees and with plenty of stores. Recent rains helping prospects for next year. Carlots white clover selling 10-10½c per lb., with less than carlots moving at 11-11½c per lb. Few small inferior lots reported sold low as 8c per lb. Small lots white comb sold at $4.80 per 24-section case.

NORTHEASTERN STATES. — Except where fall flow has been too light, colonies are in good condition for winter. Warm fall weather has caused bees to consume stores heavily. Demand better and some beekeepers already sold out. Low prices received for honey are said to have prompted many beekeepers to dispose of their hives Wide range in prices reported for white extracted in 60-lb. cans—from 8½c to 12½c per lb.; mostly around 10-10½c for large lots. Sales of buckwheat reported at 7-9c per lb. One carlot sale of white comb reported at $4.75 per case; other carlots No. 1 white quoted at $3.85-4.25 per case, with smaller lots ranging $4.00-5.50 per 24-section case, and buckwheat comb from $2.50 to $3.84 per case.

Import and Export Figures.

Secured through Bureau of Foreign and Domestic Commerce. Figures indicate pounds.

	August.	Sept.1-21
Honey from foreign countries	154,860	106,296
Honey from Porto Rico	290,055	161,270
Hawaii	132,095	111,363
Total brought into U. S.	577,000	378,929
Honey exported from the U. S.	71,131	199,612
Honey exported during same period last year	190,340	371,807
Beeswax imported	339,836	150,109
From Porto Rico and Hawaii	12,303	3,697
Beeswax exported	4,617	1,885

Telegraphic Reports from Important Markets.

BOSTON.—Since last report 327 cases from Vermont by express and 150 cases from California by freight arrived. Fairly good demand for extracted, but light demand for comb. California light amber sage weaker, other lines steady. Extracted: Receivers' sales to confectioners and bottlers in 5-package lots or more, per lb., Porto Rico, amber, 8½-9c. California, white sage, 14-16c, light amber sage 10½-12c. Comb: Sales to retailers, New York, 24-section cases white clover, $6.00-6.50; carton stock $6.50-7.00. Vermont, carton stock, 24-section cases, white clover, best, $6.50-7.00; 20-section cases white clover, best, heavy, $5.50-6 00; light, $4.50-5.00.

CHICAGO.—Since last report 1 car Arizona, 1 car Illinois, 3 cars Colorado, 1 car California, 1 car Texas, 6,500 lbs. Iowa, 8,500 lbs. Wisconsin and 900 lbs. Nebraska arrived. Extracted: Supplies increasing. Demand and movement fair, market barely steady. Sales to bottlers, bakers and confectionery manufacturers, Colorado, alfalfa and mixed sweet clover and alfalfa white 10-10½c, few 11c; light amber, 8-9c. California, sage, white, 10½c; few 11c. Comb: Supplies moderate. Demand and movement good. Sales to retailers in 24-section cases, Colorado, sweet clover and mixed sweet clover and alfalfa No. 1 heavy, $4.00-4.25; No. 2, $3.50-3.75. Wisconsin, Michigan and Illinois, alfalfa and white clover mixed No. 1 heavy, $3.75-4.00; few, $4.25; No. 2, $3.00-3.50. Beeswax: Receipts moderate. Demand and movement fair, market steady. Sales to wholesale druggists and laundry supply houses, Colorado, California and Arizona, light 31-32c; dark, 26-29c. Central America, light, 28-30c; dark, 23-26c, some low as 17c.

KANSAS CITY.—Since last report 1 car Arizona arrived but diverted before being unloaded. Supplies moderate. Demand and movement moderate, market steady. Sales to jobbers: Extracted: Colorado, water white sweet clover, 12c. Arizona, light amber alfalfa, 7¾-8c. Comb: 24-section cases Colorado, white alfalfa fancy, $4.25; alfalfa and clover white No. 1, $4.00; Missouri, white clover, No. 1, $4.50.

PHILADELPHIA.—Extracted: Arrivals light, and with a light demand the market has been dull. Only a few sales reported to bakers of Porto Rico light amber at 83c per gal. Beeswax: Supplies rather light, and although the demand has been light the market has strengthened slightly. Sales to manufacturers, per lb., Chili, light, 28-29c; Brazil, light, 27-28c; Africa, dark, 24-25c.

ST. LOUIS.—Arrivals since last report include 1 car Colorado, 2 cars California. Supplies moderate. Demand and movement moderate, market steady. Practically no jobbing sales; all direct to retailers. Comb: Colorado, white sweet clover, in 24-section cases, $5.00. Extracted: California and Missouri, light amber, 8½-10c. Beeswax: No arrivals reported during past month. Market still dull and practically unchanged. Ungraded average country run ranges 26-26½c per lb. to farmers.

NEW YORK.—Domestic receipts limited. Practically no foreign receipts. Demand limited, market steady. Slightly better feeling. Extracted: Spot sales to jobbers, wholesalers, confectioners, bakers and bottlers, domestic, per lb., California, light amber alfalfa, 7-8c, few 8½c, white sage 10½-11½, white orange 12-13c, light amber sage

8½-9½c, extra light amber sage 9-10c. Intermountain region, white sweet clover, 9½-10c. New York, buckwheat 8-9c. Porto Rico, refined 75-85c per gal. Beeswax: Foreign receipts limited. Demand good, market strong. Spot sales to wholesalers, manufacturers and drug trade, per lb., Chili, light 27-29c, Brazil 26-28c, West Indies, dark 20-21c. Africa, dark 23-24c, few 25c.

The A. I. Root Company's Quotation.

Since our last quotation we have purchased only a few small lots of water-white extracted white clover honey from local producers, at 10½c per lb., f. o. b. shipping point. At present we have sufficient stocks of both comb and extracted honey on hand, or contracted for, to take care of our immediate needs.

The Opinions of Honey Producers Themselves as Reported to Gleanings in Bee Culture.

Early in November we sent to actual honey producers the following questions:

1. What is the present condition of the colonies in your locality compared with normal as to (a) Number and age of bees? (b) Stores for winter? Give answer in per cent.
2. How does the number of colonies now in your locality compare with a five-year average? Give answer in per cent.
3. What is the present condition of the honey plants for next season in your locality as compared with normal? Give answer in per cent.
4. What per cent of the honey produced in your locality has already left the hands of the producers?
5. At what prices is honey being sold in large lots (carload or entire crop) at the producers's station? (a) Extracted honey per pound? (b) Comb honey, fancy and No. 1, per case?
6. What are prices to grocers in lots of one to five cases? (a) Extracted honey in 5-lb. pails or other retail packages? (b) Comb honey, fancy or No. 1 per case?
7. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair or rapid.

		Colony Cond.		No.		Crop	In large lots.		To Grocers.		Move-
State.	Reported by:	Bees.	Stores.	Colonies.	Plants.	Sold.	Ext.	Comb.	Ext.	Comb.	ment.
Ala.	J. M. Cutts	100	75	120	25						
Ark.	J. V. Ormond	75	100	100	75	90			$0.90		Fair
Ark.	J. Johnson	75	100	100	75	85		$5.40	.85	$5.00	Slow
B. C.	W. J. Sheppard	100	100	200	100	35	$.20		1.25		Fair
Cal.	L. L. Andrews	90	90	115	100	95	.08		.85		Fair
Cal.	G. Larinan	100	100			40	.08				Fair
Cal.	M. H. Mendleson	100	100	105	100	90					Fair
Cal.	M. A. Sayler	100	100	100	100	75	.09	3.60	.75	4.00	Fair
Cal.	M. C. Richter	90	90	80	100	80			1.25		Fair
Col.	J. A. Green	100	95	110	100	25			.65		Fair
Col.	B. W. Hopper	100	100	100	90	95	.09	3.75	.60	4.00	Fair
Conn.	A. Latham	110	100	150	110	80				6.50	Fair
Fla.	C. C. Cook	100	125	200	100	30	.08		.75		Fair
Fla.	H. Hewitt	100	100	120	100	50	.08		.65		Fair
Fla.	W. Lamkin	100	100	300	100	40	.08		.65		Fair
Ga.	J. J. Wilder	110	120	130	100	95	.09	4.25	.75	4.75	Fair
Ill.	A. L. Kildow	100	100	115	25	15	.10	4.00	.75	5.00	Fair
Ill.	T. C. Johnson	100	100	100	100	50		4.90	.90	5.00	Fair
Ind.	J. Smith	100	100	125	100	50					Fair
Ind.	E. S. Miller	100	100	100	90	25			.80	4.80	Fair
Iowa.	E. G. Brown	100	80	110	100	65	.10		.75	4.80	Rapid
Iowa.	F. Coverdale	125	120	110	100	60		4.00	.60	4.25	Fair
Iowa.	W. S. Pangburn	100	100	100	100	25	.10	5.00	.80		Slow
Kan.	J. A. Nininger	100	100	110	90	30			.75	5.00	Fair
Ky.	P. C. Ward	100	100	100	75	90					Fair
La.	E. C. Davis	100	100	100	100	50	.09		.65	5.50	Fair
Me.	O. B. Griffin	95	95	90	100	50		7.20			Fair
Md.	S. G. Crocker, Jr.	90	80	100	75			5.00	1.00	5.50	Slow
Mass.	O. M. Smith	100	100	100	100	10			1.10	5.50	Slow
Mich.	I. D. Bartlett	100	50	100	100	50	.10		.75	4.25	Fair
Mich.	L. S. Griggs	100	50	125	100	60	.10	4.80	.75	4.80	Fair
Mich.	F. Markham	100	90	150	50	75	.11		.80		Fair
Nev.	E. G. Norton	90	90	90	80	50	.07		.50		Slow
N. Y.	Adams & Myers	75	75	150	125	50			.95	5.75	Fair
N. Y.	F. W. Lesser	100	100	110	125	40				4.80	Fair
N. Y.	R. B. Willson	100	75		75	25	.09	4.50	.85	4.50	Slow
N. C.	W. J. Martin	95	100	100	100	90	.09	4.50	1.25	5.40	Fair
N. C.	C. L. Sams	100	100	100	100	85			1.00	5.50	Fair
Ohio.	E. G. Baldwin	100	100	100	95	35		3.50	1.00	4.00	Fair
Ohio.	R. D. Hiatt	80	80	100	90	90			1.00	5.50	Fair
Ohio.	F. Leininger	100	75	100	75	15	.12		.60		
Ohio.	J. F. Moore	90	70	100	90	40			.80	4.30	Fair
Okla.	J. Heueisen	80	100	90	100	80			.75		Fair
Okla.	C. F. Stiles	80	90	100	80	60			.70	4.75	Fair
Ore.	E. J. Ladd	90	100	80	100				.55	3.75	Fair
Ore.	H. A. Scullen	100	100	100	100	50	.10		.55		Slow
Pa.	D. C. Gilham	100	75	110	75	10			1.05	7.20	Slow
Pa.	G. H. Rea	100	100	100	100	50			.80	5.50	Fair
S. C.	A. S. Conradi	20	20	10	100	90					Rapid
S. D.	L. A. Syverud	80	90	90	90	40			.65		Fair
Tenn.	J. M. Buchanan	100	75	100	90	95					Slow
Tex.	T. A. Bowden	75	80	90		75			.70		Fair
Tex.	J. N. Mayes	75	80	40	80	95	.09		.50		Rapid
Utah.	M. A. Gill	100	80	120	90	80	.07	3.50	.45	4.00	Fair
Utah.	N. E. Miller	80	90		85	65	.08				Slow
Vt.	J. E. Crane	100	100	125	100	60		5.00	1.25	8.40	Slow
Va.	T. C. Asher	90	95	90	100	90			1.10	6.00	Fair
Wash.	W. L. Cox	100	100	80	95	25			.90	4.50	Fair
Wash.	G. W. B. Saxton	100	100	100	100	25	.09		.60		Fair
Wash.	G. W. York	90	95	85	75	75	.08	3.75	.65	4.30	Fair
W. Va.	T. K. Massie	100	80	90	100	95					Fair
Wis.	N. E. France		100	80	75	60			.65	5.00	Fair
Wis.	E. Hassinger, Jr.	100	100	105	100	50	.11		.85		Fair
Wis.	H. F. Wilson	100	90	100	90	60	.12	4.50		7.50	Fair

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2. **Larger Honey Crops are assured.** The bees are enabled to rear brood earlier in the spring, with no danger of chilled brood on account of cold snaps. One bee in March is worth one hundred in July.
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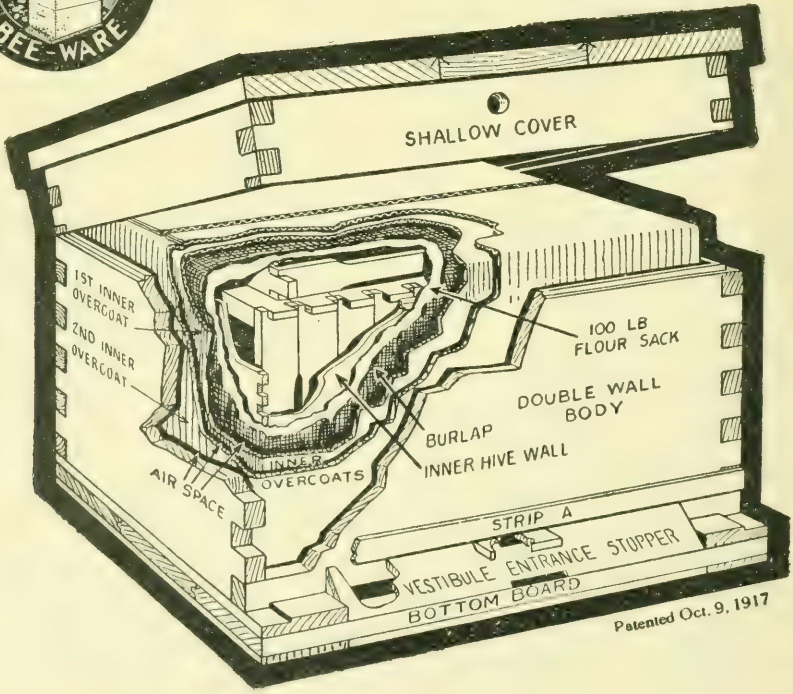
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For 4x5x1⅜ sections including section-holders, fence-separators, springs, tins and nails.

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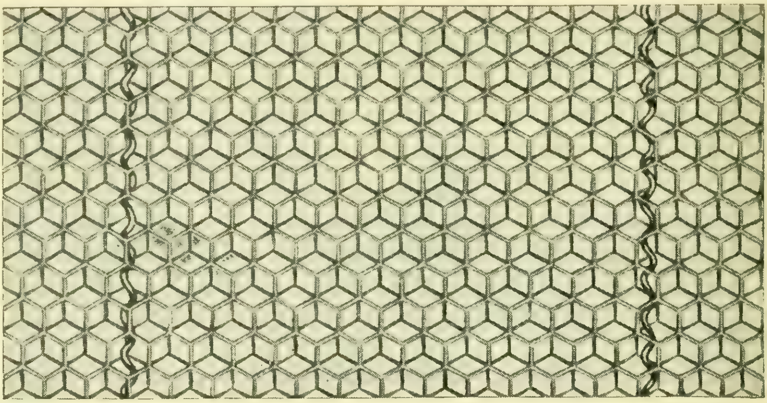

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EVERY USER AN ADVERTISER.—Ask your neighbor who has tried Dadant's Wired Foundation how he likes it and we will need to say no more to you. His advertisement will be sufficient.

DADANT'S WIRED FOUNDATION may be used in new-style split bottom-bar frames or in the old-style one-piece bottom-bar frames with equal satisfaction. It is also adaptable to any size and style of brood or extracting frame.

COSTS NO MORE.—Since Dadant's Wired Foundation reduces the cost and labor of wiring, its extra price of three cents per pound above the catalog prices of old-style foundation is thus more than returned to the beekeeper.

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Wired Foundation is sold by all distributors of Lewis ''Beeware'' and Dadant's Foundation. Send them your orders.

Dadant & Sons, Hamilton, Illinois

GLEANINGS IN BEE CULTURE

DECEMBER, 1922

EDITORIAL

Gleanings is 50 Years Old.

ON January 1, 1923, it will be exactly 50 years since A. I. Root sent out the first issue of Gleanings in Bee Culture, the little eight-page journal which so rapidly grew into a great bee journal. On that date we shall issue a large anniversary number to celebrate the 50th birthday of this journal. This large anniversary number will be crowded with exceptionally interesting and valuable matter and handsomely illustrated to measure up to the occasion.

* * *

Disinfecting Combs of American Foul Brood.

FORMERLY many experiments were tried in this country in an effort to disinfect combs containing American foul brood, without destroying them, by fumigation or by spraying with some disinfectant, but none of these were successful. Recently, however, Dr. J. C. Hutzelman has worked out a method for disinfecting combs of American foul brood that looks more promising. Dr. Hutzelman has written up his experiments for this journal, and his article appears in this issue on page 764.

* * *

Honey in Automobile Radiators.

JUDGING from the number of inquiries received at this office, there will be considerable honey used in automobile radiators this winter to prevent freezing. We have made some tests to determine the freezing point of mixtures of honey and water of different strengths, which agree in general with the results obtained by Joseph E. Palmer as reported on page 794 of this issue. For ordinary winter temperatures not lower than 12° to 15° F. equal parts of thick well-ripened honey and water should be enough to prevent freezing, but for temperatures around zero or below not less than two parts of honey to one part water should be used.

It would not be safe to use sugar syrup or molasses in these proportions, for a sugar (sucrose) solution of equal concentration does not depress the freezing point as much as honey owing to its different molecular construction.

The Simplest and Cheapest Winter Feeder.

IT sometimes happens that the cheapest things are much better and more serviceable than those which are more expensive. It is certainly true that the cheapest feeder for late fall feeding, and one that is as serviceable as the very best feeder ever invented, is the ordinary ten-pound honey-pail with a friction top. Such pails can usually be bought for a few cents each. To convert one of these pails into a feeder, all that is necessary is to punch 30 holes, a scant $\frac{1}{16}$ of an inch in diameter in the cover. It is important that there be no more than 30 holes, and that they be no larger than a scant $\frac{1}{16}$ of an inch. It is much better to punch the holes from the inside out. This will leave the ragged or burr edge of the holes projecting, affording a convenient foothold for the bees while they are filling up preparatory to storing in the combs below. If there are too many holes, or if the holes are too large, the feeder will be inclined to drip, thus causing robbing. This is shown in Fig. 4 on page 795. The pail at the right in the same figure has 30 holes a scant $\frac{1}{16}$ of an inch in diameter.

* * *

Honey Market Conditions.

THE honey market thus far has been a hard one especially for those having large lots. Carload buyers are still buying on the "hand to-mouth" plan, and will perhaps continue to do so for some time. The consumer demand did not begin in earnest until a month or more later than usual, which unfortunately caused considerable price-cutting in an effort to force the honey upon an unwilling market. We are still importing large quantities of honey and exporting but little. (See page 754). According to the figures compiled by the Department of Agriculture the yield per colony this year was 53.8 pounds as against 44.2 last year. While these figures look discouraging, the figures submitted by our market reporters indicate that 58.5 per cent of the 1922 crop had been sold up to about December 10 as against 66 per cent last year. Most small lots have already been cleaned up, and, if sufficient effort is put forth from now on, the 1922 crop should be well cleaned up before new honey appears next year.

Do Bees Invert Thick Sugar Syrup if Fed Late in the Fall?

IT is well known that bees are able to modify sugar syrup so that it does not so readily granulate after being stored in the combs. Formerly the books and journals devoted to beekeeping advised that feeding for winter, when necessary, be done early in order that the bees be given a chance to properly invert the sugar syrup to prevent its crystallization after it is stored in the comb. During more recent years beekeepers in the North have learned the great value of postponing feeding for winter until after the bees can no longer gather nectar from the flowers. When feeding is done late the sugar syrup is stored below the honey, thus insuring that the bees will use it first during the winter, thus giving them the sugar syrup while they are confined to their hives, and leaving the honey stores until spring when the bees are able to fly at frequent intervals. In the far north this is an important consideration in either outdoor or cellar wintering since the quality of stores must be the very best to insure successful wintering year after year.

When feeding is postponed until October the syrup should be made much heavier than for earlier feeding to avoid the necessity of the bees' ripening it. It has been generally supposed that the bees are not able to modify this thick syrup to any extent, and for this reason tartaric acid is used to prevent crystallization. In our November issue, page 714, J. E. Crane describes a simple experiment to prove that the bees do modify heavy syrup even when fed late in the season.

In our experimental work here we have made some surprising discoveries along this line. Heavy syrups made of two parts of sugar and one part of water, as well as some made of 2¼ parts of sugar to one part of water, were fed to the bees and the next day some of this stored syrup was taken from the combs and the degree of inversion measured by means of the polariscope. Even in this short time the syrup was modified so that the reading was 52 instead of 68, which was the reading before the syrup was fed. After the syrup had been in the combs for a week the reading was 38, thus showing that the invertase which the bees added to the syrup continues to modify the sugar syrup even at the ordinary hive temperature during the fall. In these experiments with sugar syrup to which no acid has been added, a large percentage of the syrup was crystallized within a few days after feeding. If it were possible to postpone crystallization for a few weeks after being fed, it is probable that the invertase added by the bees would modify the syrup sufficiently to prevent crystallization, but all of our experiments thus far have resulted in entirely too much crystallization before the invertase has had an opportunity to do its work.

One of the surprising things which we learned from our experiments is that when the syrup is fed while hot there is more crystallization in the combs a few days later than when it is fed cold. On measuring the degree of inversion in samples taken of syrup which was fed hot and samples taken of syrup which was fed cold it was found that inversion was carried to a greater degree in that which was fed cold. The density of the syrup also has much to do with the degree of inversion, and we are now busy with experiments to find out more about this and also about the different degrees of inversion resulting from different methods of feeding. We expect to be able to announce some of these results in our January issue.

◆

How Moisture Escapes from the Hive.

ON page 780 of this issue J. E. Crane calls attention to the wastfulness of arranging the hive so that the moisture is carried out by ventilation. Fortunately it is not necessary to pass a current of air through the beehive during the winter to carry out the moisture, for the moisture can leave the hive by diffusion. It is not even necessary for the air within the hive to move about in order to have the water vapor leave the hive by diffusion. If a jar containing air heavily laden with moisture is placed in a dry atmosphere, the moisture will escape from the jar until the relative humidity of the air within the jar is equal to that outside even though there is no movement of air into or out of the jar. This is because the vapor pressure is greater in the moisture-laden air than in the dry air, which causes the vapor to escape until a balance of vapor pressure outside and inside the jar has been reached. This is on the same principle as that of perfume being released in one corner of a room in which the air is not in motion. Within a short time the perfume will have permeated the air within the room without the necessity of the air moving in order to carry it about. It will thus be seen that the diffusion of gases is quite different from the mixing of gases by ventilation. Of course, the process is much more rapid when the air is stirred, but when thinking of the escape of moisture from the beehive it is well to remember that the moisture can escape by diffusion, if the hive is properly arranged, regardless of any movement of the air. In fact, the water vapor is diffused into adjacent space whether air is present or not.

This diffusion can take place through porous material. For instance, if a glass tumbler filled with air heavily laden with moisture is covered with a piece of blotting paper and is placed in a room containing dry air of the same temperature, there would be no movement of air to or from the tumbler because the air pressure above and below the blotting paper is the same; but the vapor pressure in the tumbler being much greater than the vapor pressure outside, water vapor will pass through the blotting paper until the vapor pressure within the tumbler balances that outside. In a similar manner moisture can escape from a beehive through a porous covering or even through the walls of the hive without the necessity of changing the air in the hive.

Much has been said about upward ventilation in the beehive during winter to carry out the moisture. Some have even advocated providing openings in the top of the hive to permit moisture to escape. When such openings are provided not only does the moisture escape but the warm air escapes also, since a current is set up through the hive because of the difference in the temperature of the air within the hive and that outside. Except possibly in the extreme north well-packed colonies of bees that are wintering well do not need any other avenue for the escape of moisture than that of the entrance. Where it gets so cold that the inner walls of a well-packed hive become chilled below the dew-point, thus causing condensation on the walls of the hive, a porous covering may be advisable. The great danger here is in having the porous covering so loose that currents of air take place through it. The covering should be sufficiently compact so that there can be no upward ventilation. Some beekeepers put a quilt over the frames and cover this with a sheet of newspaper to prevent air currents. Such an arrangement with an abundance of packing above should retain the warm air, and at the same time permit the diffusion of moisture sufficient to keep the hive dry.

Moisture in the Bee Cellar.

IN a damp cellar the difference between the vapor pressure inside the hive and within the cellar is much less than that in a dry cellar. The escape of moisture from the hive will therefore be much slower in a damp cellar than in a dry one. In this issue, on page 779, Walter Harmer describes conditions sometimes found in damp cellars and tells how this may be overcome by upward ventilation in the hive. This trouble can also be overcome to a large extent by keeping a higher temperature in the cellar or by better ventilation of the cellar. It should be noted that raising the cellar temperature a few degrees not only greatly increases the capacity of the air within the cellar to take up moisture, but also causes the bees to generate less heat, which means that they consume less stores and therefore give off less moisture. In this way the escape of moisture from the hive is hastened, and at the same time the generation of moisture within the hive is decreased. Of course, if the temperature is raised too high, the bees may become more active because of the higher temperature than they were before when they were compelled to generate sufficient heat to keep the cluster warm. The proper adjustment of the cellar temperature is one which must be worked out for each individual cellar not only according to the cellar itself but according to the number and activity of the bees which it contains.

Is Moisture Within the Hives Detrimental to the Bees?

BEEKEEPERS have learned to associate wet and mouldy combs with poor wintering, and have thus been led to consider moisture within the hive as exceedingly detrimental to the bees during winter. It may be well to raise the question as to whether moisture is the cause of poor wintering or the effect of poor wintering. Good wintering demands that the bees be quiet during the winter period. If conditions are such that they can pass the winter in the greatest possible degree of quiescence they of course consume the smallest amount of stores, and therefore give off the smallest amount of moisture. Another colony in the same apiary and arranged in the same way, because of poor stores or some other cause, may be much more active, which means that they must consume more stores and therefore give off more moisture. In the one case the moisture may escape from the hive as fast as it is given off, thus leaving the hive and combs dry; while in the other case the moisture may be generated faster than it can escape from the hive, resulting in wet and mouldy combs. Anything that causes the bees to become more active and consume more stores, of course, increases the amount of moisture they give off. Bees in a cold cellar, being compelled to generate more heat to keep up the temperature of the cluster, will therefore give off more moisture than if the cellar temperature is more nearly correct. In the same way, colonies that are exposed outside are compelled to generate more heat and thus give off more moisture than those well protected from prevailing winds and well packed. Poor stores, coupled with a lack of opportunity for cleansing flights during the winter, always result in greater activity and therefore an increase in the amount of moisture given off. It may be that in his effort to keep the interior of the hive dry during the winter the beekeeper is simply removing a symptom of poor wintering and is not removing the cause. There can be no doubt that moisture condensed within the hive and running down over the combs is detrimental, but if the cause of the excess of activity is removed, there should be no condensation within the hive and moisture in the form of vapor probably does no harm.

HUBAM AS A FARM CROP

This Great Fertilizer of the Soil Saves a Year in Crop Rotation

By Edw. A. Winkler

IN my article in the November issue I endeavored to give most of the advantages and value of Hubam to the beekeeper. In this article I tell some of the advantages and value of Hubam to the farmer.

Hubam Saves a Year in Crop Rotation.

It has been thoroughly demonstrated here this year that the principal argument in favor of Hubam against biennial sweet clover is that Hubam can be plowed under successfully in the fall of the same year in which it is seeded in grain or can be pastured, used for a seed crop, cut for silage or even made into very palatable legume hay ranking very closely to alfalfa, and then plowed under in this same year.

Size of the Root System.

It has been the contending opinion of some agricultural journals that Hubam has not as large a root system as the biennial.

This year I had one field of 15 acres of Hubam alone broadcast on one side of a fence, and on the opposite side were 10 acres of Grundy County biennial. It was very noticeable that the stocks and roots of Hubam were almost as large as those of the biennial field. The Grundy County is an early-blooming and harvesting type usually cut for seed about July 1. Just next to this field, on the same kind of soil, were eight acres of Hubam in oats. It seems that the rooting of Hubam is larger following grain, the stock being clipped off with the grain, and the Hubam having the whole field to itself seems to grow sturdier and with a longer and larger root. The Hubam roots in the oat field were much larger than those of the biennial.

Hubam here this year, seeded with a cover crop on sweet well-inoculated thoroughly prepared soil and clipped off with the binder when the grain was cut, made even a better growth than Hubam seeded alone, some fields standing up to the shoulders in eight weeks after the clipping at harvest and maturing seed.

It took nerve to begin with seed at $10 per pound, and at last spread out to more than 1000 acres of good farm land. But the farmers around here in this county, who once turned a deaf ear to the new annual legume, are now moved to an inquiry which is likely not to end short of placing Hubam in every part of this county.

Its Great Fertilizing Value.

The late Dr. C. G. Hopkins of Illinois State University at Urbana, Illinois, emphasized the fact that 6.4 tons of dry sweet clover matter furnish as much humus-forming material and as much nitrogen as would be furnished by 25 tons of the average farm manure.

Nitrate nitrogen experiments, conducted in 1919 at the State University and printed in Bulletin No. 233, give the important fact that approximately one ton (water-free basis) of spring growth of sweet clover tops (which would be fall growth of Hubam), together with the roots and fall residues, furnished as much nitrate as 19.8 tons of average farm manure.

Hubam planted broadcast yields over four tons of dry matter per acre, equal to nearly 80 tons of farm manure, if plowed under.

The following table from the findings of the Iowa Station will show more clearly the advantage of Hubam over all other le-

TABLE I—COMPARATIVE YIELDS OF HUBAM AND OTHER LEGUMES FOLLOWING OATS—1921.

Legume.	Yield (tons per acre)	Av. length plants June 29 (inches).	Av. length plants Oct. 4 (inches).
Hubam Clover	2.07	25	42
Bi. Wht. Swt. Clover	1.85	18	22
Bi. Yel. Swt. Clover	1.56	18	22
Alfalfa	1.14	7	19
Medium Red Clover	.95	6	12
Mammoth Clover	.92	6	10
Alsike Clover	Poor stand	4	8

*TABLE II—COMPARISON OF NITROGEN RETURNED TO SOIL BY HUBAM AND OTHER LEGUMES.

	Pounds water-free material per acre.		Per cent of roots to total weight.	Per cent nitrogen water-free basis.		Lbs. nitrogen per A. Water-free basis.		
	Roots	Leaves and Stems.		Roots.	Leaves and Stems.	Roots.	Leaves and stems.	Total.
Hubam	1664.0	3784.0	30.54	2.48	2.43	41.25	91.95	133.20
Bi. Wht.	1451.3	3381.8	30.03	2.86	2.90	41.51	98.07	139.58
Med. Red	827.8	1736.6	32.28	2.29	3.43	18.96	59.57	78.53

*Detailed report of experimental methods used is not included because of lack of space. It has been mimeographed and is available for agronomists and others interested.

TABLE III—ANALYSES OF HUBAM AND BIENNIAL WHITE SWEET CLOVER.

	Per cent protein.	Per cent nitrogen-free extract.	Per cent crude fiber.	Per cent ether extract (crude fat).	Per cent ash.
Hubam Clover	14.32	39.06	33.76	1.79	5.27
Biennial Wht. Swt. Clover	12.94	32.11	38.31	1.16	5.59

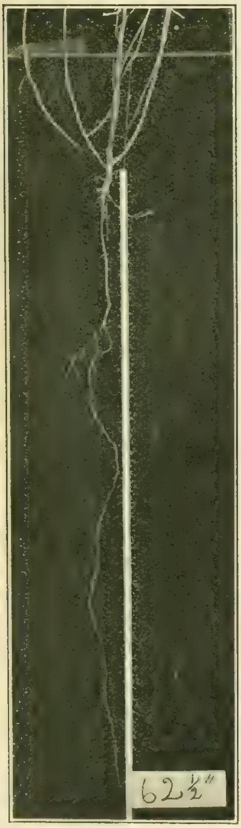
gumes. These are referred to in the Iowa circular No. 76.

Advantages for Fall Plowing.

Owing to the impracticability of plowing biennial sweet clover under in the fall and the necessity of leaving the second year's spring growth to make a large growth before plowing under in order to destroy thoroughly all the plants, and eliminate the volunteer trouble, which brings plowing close up to corn-planting time, Hubam, which should be turned under in the fall when the bloom has blown and the seed pods are all green, is sure to become the universally used and foremost of legumes adapted to almost all climates and soils.

Roots Over Five Feet Long.

Owing to its deep-rooting system, in proof of which I am enclosing a picture, this legume, which gets its nitrogen from the air and deposits it in the soil instead of taking it from the soil, bids fair to become the universal soil-builder. When we can convince those objectors who still believe sweet clover to be an obnoxious weed, and overcome their prejudice against it, pointing out that their land is sour and depleted and that they are not getting as large crops as their neighbors who have been planting clovers and rotating crops, we shall begin to get our farms back to the fertility they possessed 100 years ago.



Root system of Hubam measuring 62½ inches in length.

This root was dug up from a field of Hubam sown broadcast late last spring alone. Another root was dug up in a field of Hubam following winter rye, the root measuring 52 inches. We did not get all of either of the roots.

The opinion that Hubam does not root as large and deep as the biennial may never be entirely expelled, but many are taking a different view on this subject after looking at some of the roots that were dug up this fall.

The agitation for the growing of Hubam, the ultimate purpose being soil-enrichment, has led men to realize more than ever before the necessity of some such legume as Hubam for the maintenance of the fertility of our soils.

Beekeepers should not overlook the advisability of inducing farmers in their locality to plant alsike clover also. Will County is one of the two counties in this state that together produce approximately 80 per cent of the alsike seed raised in this state. Farmers near my apiaries have harvested as high as $96 per acre of alsike seed.

Hulling Hubam. The honeybee is the most important pollinator of sweet clover and is therefore an essential factor in seed production.

It is also well to keep in touch with the yields made near your bees, in order to inform prospective growers, and also, if at all possible, to furnish bees in that locality to pollinate the bloom. One should also keep in touch with those who have seed to sell.

Alsike, of course, cannot be compared favorably with Hubam as a soil-builder on account of its short-rooting system, but it is of great value as an early honey plant where white clover is scarce. There is no bloat with Hubam or with alfalfa and other legumes. Stock take to it readily.

I had a field of Hubam this year seeded in oats. After the oats were harvested a good crop of Hubam seed was harvested, and, had the farmer wished to cut the Hubam the second time instead of plowing it under, a crop of Hubam hay of approximately 1½ to 2 tons per acre could have been harvested. Such fields will be very rare and are due entirely to the type of soil and early planting. This field was planted on April 19.

Many farmers have disced up their Hubam stubble and drilled in winter wheat, others have drilled it in without discing. Enough Hubam seed had shattered off to insure a thick stand of Hubam following their winter grain next summer.

Value of Sweet Clover Silage and Straw.

The following table, taken from Farmers' Bulletin No. 820, will give some idea as to the valuation of the sweet clover straw piles:

From this it will be seen that sweet clover compares favorably in food elements with corn silage. The straw, of course, contains less protein and carbohydrates than when

TABLE III—COMPOSITION OF SWEET CLOVER SILAGE AND WELL-MATURED CORN SILAGE.

		Constituents (per cent)			Carbohydrates.		
Kind of silage.	Number of of analyses.	Water.	Ash.	Crude protein.	Fiber.	Nitrogen-free extract.	Fat.
White sweet:							
First year's growth[1]	1	73.7	1.73	3.17	20.8		0.65
First crop, second season[2].	1	73.7	2.57	2.06	8.08	12.32	1.27
Straw[2]	3	73.7	1.19	2.70	13.59	8.33	.50
Corn, well matured[3]	121	73.7	1.70	2.10	6.30	15.40	.80

[1] Analyzed by the Illinois Agricultural Experiment Station. [2] Analyzed by the Bureau of Chemistry.
[3] Analyses compiled by Henry and Morrison.

the entire plant is used, as most of the leaves shatter from sweet clover before it is cut for seed.

Next year we will see quite a few farmers cutting Hubam and corn and mixing the two together in their silage.

When this is done approximately two-thirds of the total corn acreage, which would be cut for silage, may be permitted to mature. This mixture will make much better silage than corn silage alone.

Beekeepers will do well to write to the Division of Publications, Washington, D. C., for all Farmers' Bulletins pertaining to sweet clover, such as "Sweet Clover Utilization," No. 820; "Growing the Crop," No. 797; "Sweet Clover Harvesting and Threshing the Seed Crop," and especially Dept. Circular No. 169.

At the annual meeting of the Chicago Northwestern Beekeepers' meeting in Chicago, December 4 and 5, I will give a demonstration in soil-testing, showing the difference in soil before growing Hubam and after growing it.

Joliet, Ill.

Hubam cut for seed. Note the large amount of straw on this field, indicating the rank growth. The soil is greatly enriched by the fixation of nitrogen, and the bees are enriched by the abundant supply of nectar.

CAN THE COMBS BE SAVED

New Treatment for American Foul Brood by Immersion in Disinfectant Solution

By J. C. Hutzelman, M. D.

THE beekeeper who has not had experience with American foul brood has missed a fight with a dangerous enemy. On account of the fact that this disease is due to a germ, the apiarist is dealing with an unseen enemy; that is to say, this enemy can not be seen with the unaided eye. We see only the destruction wrought by this enemy. If we conceive that perhaps fifty millions of these germs would not make a mass as big as an ordinary pinhead, and that if just a few of these germs find their way into the food of a baby bee, this baby bee is almost sure to die, showing the usual symptoms of American foul brood. If germs were as big as wax moths, the beekeeper would know as soon as he opened a hive, that his bees had American foul brood. Then he would stop right there to take precautions against spreading the disease to his other colonies. But germs are mighty small things. Consequently, the beekeeper, particularly the man inexperienced in American foul brood, is frequently caught with this disease of several months' standing, scattered throughout his apiary.

If I should find in going over my bees that a colony showed a single dead larva that looked like one dead from American foul brood, I would mark the location of this larva and watch that colony until sure whether the disease is present or not.

Experiments Began Early in 1921.

At the end of the season of 1920, I had several colonies showing advanced stages of American foul brood. The combs were as perfect as are to be had, so I hesitated to destroy them in the usual way of getting rid of American foul-brood combs. The destruction of a nice lot of combs, because they were occupied by bees afflicted with foul brood, has always appealed to me as a big loss. These combs were stored away in a place safe from robber bees. During the early spring of 1921, I started experimenting with a number of disinfectants which were dissolved in water. I came to the conclusion that a disinfectant dissolved in water showed little hopes of success, because the disinfection of a honeycomb containing dead larvae due to American foul brood presents a peculiar difficulty.

Difficulties in Way of Disinfecting Combs.

In the first place, such a honeycomb as ordinarily occurs in the brood-nest usually contains more or less honey. However, this honey, by extracting, is easily disposed of. After removing the honey, the brood-comb consists of beeswax, which, together with the wood surrounding the comb, may be more or less covered with propolis. This resinous substance may be present in quantities ranging from lumps, half the size of a hen's egg, to mere thin stains. Numerous cells of the comb may be filled with pollen, which is mostly a protein substance. Most important of all are the cells containing dead larvae in all the different stages characteristic of American foul brood. These cells may be sealed or unsealed. The larvae may be hard dried-down scales adhering firmly to the cell walls, or they may be the soft gluelike ropy masses usually described.

To sum up, after removing the honey from a diseased brood-comb, the comb consists of beeswax, propolis, cells filled with pollen and cells containing dead larvae.

Success in sterilizing a honeycomb made up of the above constituents will only be attained with a substance that has the property of penetrating these substances. The fact is established that any part of the interior of a beehive infected with American foul brood is liable to be covered by disease germs. Bees are continuously carrying bits of propolis and other matter, as is shown by the travel-stains on new comb. As a result, there may be countless numbers of germs buried in masses of propolis, or worked into the wax that goes to form a comb. Hence come the failures that are due to disinfecting with gases, as formaldehyde gas; likewise, watery disinfectants, because neither beeswax nor propolis are penetrated by water in a reasonable length of time.

Substance Must Penetrate Beeswax, Propolis, Pollen and Dead Larvae.

Thus, the problem of disinfecting a comb containing American foul brood resolves itself into finding a substance that will penetrate beeswax, propolis, pollen and the dead larvae, in sealed or unsealed cells either in the form of dried scales or the ropy gluelike state. Also, this substance must not destroy the wood of the frame, the wires supporting the comb, or the comb itself. None of the disinfectant must remain as a residue to endanger the bees which are to occupy it. The substance must be cheap enough to make it practical for commercial use.

There are many substances which will penetrate beeswax and propolis, as gasoline, benzol, carbon bisulphide, carbon tetrachloride, alcohol, etc. But none of these alone has any value as a disinfectant for American foul brood.

One of the best substances for destroying the germs of American foul brood has been found by the Bureau of Entomology, Washington, D. C., to be formaldehyde. (Bulletin No. 809, American Foul Brood, by G. F. White.) The germs when placed in a strong solution of formaldehyde, are dead after a few hours. Fortunately, it has no damaging effect on honeycomb, wire or wood; nor does it leave a residue on the combs after drying. Now, if this be mixed with some substance that will penetrate beeswax and propolis, an ideal disinfectant will be obtained.

The number of substances with which formalin will mix that are capable of penetrating beeswax and propolis are very few, only one being worthy of consideration. This one substance is alcohol.

Alcohol containing 20 per cent of formalin is a liquid of low surface tension. This property makes it capable of promptly filling all empty space in the honeycomb.

In treating a comb containing diseased cells of American foul brood, with alcohol containing 20 per cent of formalin, one may observe the following points:

1. Beeswax absorbs the solution; consequently, it swells up, as is shown by the distortion of the cell walls of a comb that has been soaked at least 24 hours.

2. Propolis is completely penetrated, as it is made semi-liquid by the solution, because propolis is a resinous substance.

3. Cells filled with pollen are penetrated, because after drying, these masses of pollen, due to shrinkage, may be shaken, occasionally, out of the cells.

4. Diseased larvae are completely disinfected, because after drying, they, in a hardened condition, can readily be removed from the cell wall. Before drying, the characteristic ropiness is absent. Sealed cells containing diseased larvae are found to be in the same condition. The larvae are no longer repulsive to bees, as the ropy gluelike remains are hardened, and can easily be removed by the bees, as so much inert matter.

5. A surface wet with honey is disinfected,

because honey is miscible with the disinfectant.

6. The liquid fills every cell immediately, provided the combs, while held in their natural position, are inclined from side to side.

Result of Tests With Diseased Combs.

Combs, which had been treated by this method, were sent to the Bureau of Entomology. The following report was received:

"Cultures were made from the dried scales and also from granular material from sealed cells. After subculturing and incubation for four or five days, no evidence of spore germination could be demonstrated.

"A. P. Sturtevant,
"Assistant Apiculturist."

By soaking combs 48 hours in the purest grade of alcohol, containing 20 per cent of formalin, honeycomb is made just as valuable as it was before infected. On account of the violent poisons, which adhere to beeswax, that are used in making completely denatured alcohol, this kind of alcohol can not be used.

I have had more than 200 standard Langstroth combs, which two years ago were infected, pass through two seasons with no return of disease. Another 200 combs have passed through this last season with no return of infection.

These experiments have been carried out in my apiary of 150 colonies. This month of October, by most careful examination, I am unable to find a single colony infected by American foul brood. In other words, I have thus far had 100 per cent success by using alcoholic formalin as above described.

Failure to have colonies free from foul brood, after putting combs disinfected by this method in those colonies, will be due to one or more of the following reasons:

1. Carrying infectious material from a diseased hive, either directly or indirectly, into the healthy colony. The beekeeper should make sure that his hands and tools are free from foul-brood germs, when working with healthy colonies.

2. Permitting bees to obtain infected honey from a diseased hive while being examined or shaken in the usual way for foul brood.

3. Storeroom for diseased combs is not bee-tight; consequently, bees are robbing diseased honey.

4. Bees are robbing infectious honey from sources unknown to the beekeeper. This may be a neighbor's diseased hive, a weak diseased colony in a bee-tree, or a discarded honey container whose contents came from a diseased colony.

In conclusion, I wish to extend due credit to the Bee Culture Office, Bureau of Entomology, Washington, D. C., and to The A. I. Root Company, for the assistance each has given, particularly for the tests they have made.

Glendale, Ohio.

NEWSPAPER ADVERTISING

How Local Newspapers Can be Used to Best Advantage in Selling Honey

By C. H. Wolfe

If every beekeeper could speak to the whole world face to face each morning and tell the inhabitants thereof the merits of honey as a food, and of the desirability of his own honey in particular, there would be no need of other advertising, because there is no selling agency which quite equals the personal contact of the producer with the possible consumer of his product.

Such a course admittedly being impossible, we must devise other methods of reaching the buyer if we wish to reach more than our immediate neighbors and friends. Roadside signs, exhibits at the county fair, and displays in store windows and food shows are most frequently used to get the attention of honey consumers, and may be made productive of excellent results. The average beekeeper, however, can use the columns of his local newspaper to good advantage in his honey-selling campaign in addition to all other media.

There are two chief difficulties that prevent most beekeepers from using newspaper advertising as profitably as they might. One is their unwillingness to spend enough money to make a creditable showing; the other, a lack of knowledge of the best method of using their newspaper advertising appropriation.

Kind of Newspaper Advertising Best Suited for Beekeepers.

In these days of whole and half-page ads, such space as a beekeeper would be justified in buying is apt to be entirely overshadowed by the big advertiser. For that reason I have never found the ordinary space or display advertisement very profitable. I have tried "locals" or short readers, and while they do bring results, their expense, if used as liberally as they should be, mounts up pretty fast. In city papers, where the rate for readers and display space is high, honey advertisers find the use of the want columns brings them the best results for the outlay involved. The want column of your home weekly or daily can be tried out at slight cost also, and will bring sales enough to make it pay.

In retailing my own honey crop, I spend $100 or more each season in advertising in my local newspaper. I live in a town of 12,000 with a large country population tributary. I have secured the best results by the use of what is generally known in newspaper offices as a ''space reader''; that is, not less than four inches of space, one column wide, set in the regular news-size type, with no display lines except the heading, which is set similar in style to the ordinary news headline of the paper. Newspapers sometimes charge extra for advertisements so set, but the slight additional cost is justified by the returns. Position is important. Ask your publisher to give you good position. Don't ask that your ad be spread all over the front page or surrounded on all sides by reading matter, for he'll smile at you. Be content to have the first ad in the column, or in the column next to reading matter on a page containing home news. He'll give you that, usually, especially if your ad is as much as six inches long.

In my own advertising I generally use a six-inch space. I like to have the heading occupy just a single line, with letters about half an inch tall—some plain letter resembling that in their regular news story heads. The idea is to give my ad the general appearance of a news story. In the headline I always use the word ''honey'' in some combination, as, ''Say, Honey!'' ''Your Honey,'' ''My Honey,'' ''Fancy Honey,'' ''Oh, Honey,'' on the theory that those likely to be interested in honey will ''spot'' such a headline at sight. Here is one that appeared recently in a local paper.

> **YOUR HONEY**
>
> I want to sell it to you.
>
> You won't find better at any price.
>
> Still selling for Six Dollars a can (60 lbs.) for Standard No. 1 light amber extracted.
>
> A good grade of melted, strained honey from broken combs, for Five-fifty per can. Not quite as choice as my No. 1, but good pure honey just the same.
>
> A 10-pound pail of the best, water white alfalfa honey for $1.50. Come to the Honey Shop at 720 Eleventh street and see and taste. Money back on any purchase that is not 100 per cent satisfactory.
>
> **C. H. WOLFE, Beekeeper.**
>
> Sign of the Honey Shop. Phone Gr. 365. Free deliveries every day within the city.

Having attracted the attention of the reader, I try to give him some real information in the reading matter that follows. I have honey to sell, so I tell him something about my honey—the kind, the quality, how I produce and prepare for market, size of container and price. I stress the quality of my product because I believe in my honey, and I know the conditions under which it is produced. I know that my honey is better than much that is on the market, and I try to convince the honey user of the fact. But I don't run down the other fellow. I stick to the truth and write just as I would speak to my customer if he stood before me. I don't try to be eloquent or grandiloquent—just plain everyday beekeeper talk, I find, will reach nearly everybody.

I never run the same ad more than twice. Changing every time is better; tell the same story in different words. Usually I do not run an ad every issue in the daily. Two or three times a week will cost slightly more per issue, but not so much as an insertion every day, and I find the results equally good. But I find that during the main honey season, a material spurt in sales follows each ad, and a corresponding drop when my ads are left out for a week or more. Such a space reader as I use may be had in the average village newspaper with 1000 or more circulation for 20 to 30 cents per running inch per issue. If my home paper were published weekly instead of daily I should have an ad in every issue from August to December.

The right kind of advertising in local newspapers brings the customers to the honey-house, thus making the route between producer and consumer the shortest possible one.

Bee Stories in Honey Advertisements.

Last August I tried the experiment of running a series of short articles in our daily paper about bees and honey and honey production. In each story I told some interesting feature of beekeeping. One time, how honey is gathered, stored and ripened. Another, how the extracting is done, and why extracted honey is cheaper in price than comb honey. Other stories dealt with the bees themselves, how they swarm, how they guard their hive against robbers, how they keep warm in winter, etc. There is such a wealth of material to choose from that I found it hard to stop. At the end of each story I ran my honey shop prices, using about two inches of space for that purpose. I paid for these stories at regular space rates, and they were read generally by the public, and brought me scores of new customers who took the pains to speak of the articles. In fact they created more discussion about bees and honey than any advertising I ever did. Often while they were running I would be called over the phone by some reader to settle some dispute about bee behavior. Two months after the close of the series I find their effects still reflected in my honey sales and inquiries.

One effect of continued advertising of my honey is the call for my honey rather than just "any" honey, in the stores. Sometimes the merchants aren't fair, and that has its drawbacks—but that is another story.

In conclusion I wish not to be regarded as an oracle in honey advertising. Some of my experiments in that line have fallen flat. But on the whole my newspaper advertising has paid and is paying me well, and, if intelligently done, similar advertising, I am convinced, can be made to pay other beekeepers.

Greeley, Colorado.

One of C. H. Wolfe's out-apiaries, near Greeley, Colo. The honey is sold locally by carefully planned advertising in local papers.

COST OF HONEY PRODUCTION

An Accurate Accounting of Costs is One of the First Requisites in any Business

By Arthur C. Miller

YOU ask me to tell the cost of honey production and of how I get at it. Why pick on me? Just because I have been indiscreet enough in the past to make some assertions about it and to quote a few figures, it does not follow that I know. But perhaps I can say something that will help toward a solution of an important and troublesome problem.

The question is often asked, "Does beekeeping pay?" and there are as many different answers as listeners. But how can anyone give a fair and clear answer if the cost of honey production is unknown? And if we do not know what it costs us to produce a pound of honey, how can we tell what to charge for it? And yet, year after year, we sell our crop at what is offered, and, so long as we make both ends meet, we seem content.

I remember the late Rambler's reply to the query as to whether he could make both ends meet when producing honey. "Oh," was his nonchalant reply, "I gave that up long ago and now have one end meat and the other vegetables."

Some Difficulties in Figuring Costs.

Perhaps the chief difficulty usually experienced in figuring costs is the mixing-in of selling costs with production costs, and separation of these two items is particularly difficult when one retails most of the crop. Another item which usually puzzles one when trying to figure costs is placing an estimate on the value of one's labor; and this is complicated when one keeps bees as a "side line" and puts into the work a minimum part of his time. A high-salaried man with much leisure from his profession hesitates to charge the honey business with the same price per hour which his profession yields, saying it is otherwise unprofitable time or that the salary goes on anyway and the returns from the honey are "all velvet," but that is poor reasoning.

Then, there is the man in some line of farming with much non-productive time on his hands, so he devotes it to bees, gets a fair crop, sells it for what he can get and calls it "all profit." Finally, there is the professional beekeeper who has much money invested in it, devotes all the warm season to producing, much of the rest of the year to selling, and the balance to putting his outfit into shape for the active or producing season. How shall he figure his costs? Shall he charge against the honey only the time devoted to producing it or also the time taken in selling, and if these two, when does the intermediate or preparatory time get paid for? Shall he figure the different sorts of work at different prices per day or all alike?

Then, he must figure the interest on his investment, insurance, taxes, depreciation and upkeep. The plot thickens and many a man I have heard exclaim: "Oh, pshaw, I can't bother with all that. I pay my expenses and what is left over is profit." Is it? Not by any means. There comes a year when no small part of the equipment has to be replaced, a new auto purchased, lower prices received for the crop and he has to draw on his bank account. Now what is he to live on if not his bank reserve, if he is so fortunate as to have one. Suppose the next year is bad and there is no crop, and having used up each year most of the cash left after paying the year's expenses, what is he to do? Go to the bank and borrow? The banker at once wants collateral, but if the would-be borrower has none and wants to borrow on his "business," the banker promptly wants to know if it pays. What does it pay? How much is invested in it? And asks a lot more questions which not one beekeeper in perhaps a thousand can ever guess at.

While you are guessing, let me tell you how I have tried to work it out.

How to Make the Inventory.

First, an inventory must be taken. Make a list of every sort of implement you use in the business. This is far from easy and by the time you have finished, you will understand why the store clerks hate and dread "taking stock."

When the lists are complete, go over them painstakingly, rigorously cross off every item of uncertain or no value. Then set a price on what is left. Place these as conservatively as you can and, if you are not sure what they should be, discuss them with any well-posted friend you can find. After a couple of years or so, you will be able to do this quickly and more to your satisfaction. The idea is to get an estimate of their real worth, i. e., what they are worth to you for use in the business, a sort of compromise between what they would cost you to replace and what they would sell for at forced sale.

Each year thereafter, when the inventory is all figured, deduct or "charge off" 10 per cent for depreciation. In the case of the automobile, deduct 20 per cent.

Theoretically, at the end of 10 years, your outfit would stand at zero, but there are always replacements so that the zero seldom arrives.

Valuation of the Bees in the Inventory.

Then there is the question of valuing the bees, perhaps the most difficult part of the inventory. How much is a big colony to be valued at? How much a weak one? How much a medium? What is "medium" and what is "strong?" How much more is a pure Italian colony worth than a hybrid one? Suppose the pure Italian one is a little below medium in strength and the hybrid one is away above normal size for the season?

I gave it up. Life was too short to bother over it. Now, I ignore the bees to this extent. All hives occupied by a colony of bees are valued at a price equal to the hive if new. Or in other words I put an arbitrary price on every hive with a usable colony in it. I ignore all nuclei, weaklings or queenless colonies, and all "noses," be they "big" or "medium," are counted the same. All empty hives, whether with drawn combs or foundation, go into an "empty" class, prices at not over one-half of that of new ones in the flat. Arbitrary again, but as nearly correct as I can at present guess.

This is one of the places where it is both wise and necessary to adopt a simple and arbitrary way of estimating the stock. As this inventory is taken "out of season," either in fall or spring, there are no "swarms" nor "queens" nor "cells" nor nuclei to be considered.

Don't try to make a big showing here, nor to fool yourself by crediting yourself with a lot of stock of indefinite or varying value.

Valuation of the Beekeeper's Time.

The next important thing to determine is the charge to make against the business for your services. What are you worth? Are you a carpenter earning $8 a day, a laborer getting $2.50 for the same time or a salaried man getting $5000 a year?

Charge against the business all you think you are worth, be it $500 or $5000—and then go ahead and earn it. Pay yourself each week or month as little as you can get along on until the money from the crop is all in, all bills paid and depreciation charged off, and then you will know if there is any money left to pay you the rest of your year's salary.

Everyone making beekeeping a business and depending on it as his chief means of support should charge the business for his whole year's time regardless of how the winter or "idle" season is spent. He may be in Florida or Europe—that is his good fortune—but he is entitled to his pay for the whole year if his efforts have yielded enough to enable him to take a vacation part of the year.

The man running a small apiary as a "side line" and having to spend part of his time at some other business will have to decide for himself just what his time devoted to the bees is worth. He may be paid by the year at some business and yet have enough free time to care for his bees, or he may have a profession giving a fair and steady income. Such persons will have to determine for themselves how much time they devote to the bees and what it is worth. It is worth something and the bee business should be charged with it.

Cost of Operating a Colony of Bees a Year.

A year or two before the war two of us independently of each other figured the cost of operating a colony of bees for one year. We figured the actual time we devoted to the care of the colony for a year, including the extracting of the honey, valuing our time at $5.00 per day. We figured interest on the investment and depreciation. We both arrived at $2.00 as the cost of operating a colony for one year, including the labor of extracting 100 pounds of honey.

This, of course, included no "overhead" and no rent nor taxes, simply labor, depreciation and interest. It was of only relative value, giving a rough idea of costs. Now, it would be at least double as much.

How to Charge Time Used in Selling Honey.

If a commercial producer uses his time during the "idle" season to sell honey, he may very properly pay himself his salary as during the rest of the year, but it is charged against the producing account. All profit on sales goes into an account by itself, just as if the honey was bought from another producer or as if the returns were interest from an investment in stocks or bonds. If a producer chooses to use his idle time to sell honey, let him remember that that time has been paid for by the producing end of the business and is in the cost of the honey. Profit on the honey is to be considered just like income from any merchandise bought and sold, and must not be confused with the production part of the business.

To recapitulate: Make an inventory of everything pertaining to the business and price it conservatively. Do not forget a working capital of cash. Put a value on your time at least equal to what you can earn in the business you have previously followed. Charge the business with your salary, with interest on the investment, insurance, rent of ground and building occupied, and expense of hired labor; deduct at the end of the year 10 per cent from the inventory, and you will then know what your business has cost for the year. If the bees gave an average yield of 100 pounds per colony and you had 500 colonies, you get 50,000 pounds; then divide the total annual cost as above indicated by 50,000 and you will know what your honey cost per pound. If you can not sell it for as much, the loss must come out of your "salary," and it is up to you to increase production or decrease expenses or both or else the business will soon belong to someone else.

If our business is to be worthy of respect, we must know "costs," outgo as well as income. Just now, this part of it is more important than any discussions of equipment or manipulation. It is a dry subject, but a vital one, and we have got to know it and know every bit of it.

Providence, R. I.

THE CO-OPERATIVE MOVEMENT

Some Reasons for Lack of Success of Co-operation Among Honey Producers

By William H. Wolford

CO-OPERATION, in its various aspects, is a child of the marketing problem. It has been born; to murder it is crime; to be instrumental in permitting its suicide is to admit defeat and an inability to cope with a factor looming in the path of an industry's internal expansian. Co-operation among beekeepers is in its infancy. It should not be strangled; it should not be allowed to die of disease; rather, it should be fostered, nursed, and properly cared for until it reaches a maturity that will insure its own protection.

The history of co-operative enterprises in the United States has not been written in startling successes. A far greater part of them have resulted, sooner or later, in failures. The reasons have been various. Consumers' co-operation has suffered badly from the mobility of the American population. Wholesale and retail co-operation has been undermined by a low code of business ethics. Producers' co-operation, including that of honey producers, lies straining itself in the mud of unjust suspicion and mistrust in general.

A Start Has Been Made.

Already there have been numerous attempts to establish organized co-operation among beekeepers in certain localities. California has had them. New York is about to try one. All have met with disheartening opposition, and many have suffered so severely from internal upheavals and external wounds launched by opposing interests that they have lost much of their usefulness or have gone under completely. A few still struggle on, formally carrying out the routine of receiving the honey of the member-producers, and of disposing of it in whatever way nets an approximation to the market price. This year it may go to the X & Z Honey Company; next year A B C, Inc., may get it. These kinds of organizations are but carry-along affairs, with from ten to a hundred dollars dues a year, and a fifth of a cent more per pound for the honey handled.

Some co-operatives make a big thing of the advantage derived from special discounts on supplies. Pool your orders, they say, and you save from five to twenty per cent. It sounds like a gold brick. It is—as far as getting the percentage off is concerned. But the pooled order very frequently is placed where the original list price of supplies is from five to twenty per cent higher than it should be in the first place. I have run short of containers and have bought them through direct ordering cheaper than I obtained a first lot through a pooled order. This is not a knock at the co-operative ideal, but is merely cited to show that many of our associations are not operating on a result-producing basis.

The Right Direction.

Any form of activity must have a definite goal. Otherwise it will appear in action like a basket of June bees dumped on a board with no hive in sight. A co-operative association should have a definite purpose for its existence; otherwise it resolves itself into an annual picnic trip. Live, wide-awake beekeepers must study how to market their honey as well as, say, how best to increase their yard without draining their honey crop. One is equally as important as the other. What good is a crop of fine honey stored in the honey-house if it must be given away in the end to one of a horde of speculators clamoring at the door and singing, in unison, "Three cents per pound"? Producers already recognize that in numbers there is advantage, but they are not arming themselves with modern weapons.

What the Middleman Now Is Doing.

It is beyond a doubt that the middlemen are performing practically all the functions of marketing honey. That is, it is through the middlemen that the largest proportion of all the honey produced in or imported into the United States is passed on to the ultimate consumer. By middlemen, herein used, are meant wholesale buyers and packers. Retailers are considered in another class. These middlemen buy directly from the producers; they store the various lots of honey; they repack it; they frequently put it up for market under a trade name; they drum the retail trade for an outlet of their branded product; they often influence the resale price to the ultimate consumer.

Many producers attempt to perform these functions for themselves. They market their own honey. They do it, I believe, because they find the additional profit attractive. With some live-wire men, this method has proved successful. But the majority of beekeepers have neither the time nor the inclination to undertake the marketing of their ware. If they find themselves with time to spare, they usually prefer to produce more and leave the specialized job of distributing to those more experienced and more desirous of the task.

The Open Door for Producers.

There is but one course for producers to follow if they ever wish to see more of the retail price of honey flow into their own pockets. They must market their honey themselves. They need not, however, do it individually. Small groups of producers might well band together, as a start toward future consolidation, and place upon the market a branded product. But in doing so, foresight in one respect is absolutely necessary. Branding a commodity and placing it upon the market distinguishes the goods so branded, educates people to call for it, and in this way creates a demand for it. To have ten or a dozen different brands in one section of a state would tend to lessen the effectiveness of any one.

The solution to this difficulty is this: There should be one great brand under which certified honey of a state or section is marketed; under this general trade-mark, if it is found necessary or desirable, sub-differentiation may be placed upon the label. Such sub-differentiation must not detract from the impressiveness or dominance of the general trade name.

The Necessity for Differentiation.

Little can be hoped for in advertising honey as honey. A shirt factory does not advertise just shirts. It advertises A B C shirts or X Y Z shirts, as the case may be. The factory knows that to stimulate the demand for a shirt as a shirt may not return that particular factory one sale in a hundred. But to puff and pat on the back A B C shirts will ultimately turn many shirt buyers to try the new factory's goods.

The same rule applies to honey, with two or three minor exceptions. The individual producer may have fair success, in his narrow circle, by advertising his name on his label, but for the best results, county, state and sectional co-operation of the right nature only can bring about a honey marketing scheme that will stand the test of time.

Avoid the Snags of the Past.

No country in the world has succeeded better with co-operative enterprises than England. Indeed, the practice has so popularized itself that today there is springing up competition among co-operative chains. This leads to the observation that England has passed through the stages of co-operative expansion, and has experienced the pitfalls and the accelerators of this form of marketing. A complete tabulation here is impossible, but among those that stand out

(Continued on page 811.)

FROM THE FIELD OF EXPERIENCE

SHADE FOR THE BEEHIVES

A. I. Root Tells More About the Grapevine Apiary of Olden Times

Over 50 years ago, in studying up different methods of shading the hives during the hottest summer months, I devised what I called my "grapevine apiary." In the spring and fall we want all the sunshine to strike the hives just as much as possible; and during a great part of the year sunshine is a big help; but when we have our very hottest weather, say in July and August, there are times when shade is very important. The shade of trees has been used, especially that of fruit trees; and if we could have a tree just big enough, and not too big, it might be a good thing. But most trees get to be big trees in spite of us, and therefore I settled down on a Concord grapevine. I decided that the hives should be somewhere from six to ten feet apart. Then about a foot away from the hives, on the south side, I put down a stout oak stake. These stakes were about as high as one's head and horizontally across the stake, about half way up, was a wooden strip about a yard long and three or four inches wide. Near the top of the stake a similar slat was fastened, and the Concord vines were tied to this post with the branches distributed along the slats. In the early volumes of our A B C book we had pictures of the hexagonal apiary; and right close to our factory was seen our grapevine apiary with four or five hundred hives.

Part of the original "grapevine apiary" at the Home of the Honeybees.

What brings the matter up just now is the big crop of Concord grapes we have just harvested. Our different buildings have encroached on the hexagonal apiary that had the original number of 427 hives, so that now there are only about 300, and as many vines trained on the trellis as described above. For 50 years we have had a crop of Concord grapes from these vines, more or less; but this present year, 1922, I think we have had the biggest crop of any. At 4 cents a pound the grapes brought something over one hundred and fifty dollars. From 300 vines this would make 50 cents per vine, or 12 to 13 pounds from each vine. Of course some of them gave twice that amount or more. Please consider that during all of these 50 years the vines have been clipped back to prevent interference with the apiarist when moving around.

By the way, I decided years ago that every hive should be so situated that the operator could walk all around it; and I think that most beekeepers nowadays have come to about the same conclusion. After experimenting with "house-apiaries," I said that I wanted each and every hive to stand out on the ground where it could get the sunshine, and where the apiarist could walk all around it. You will notice that the vine does not cut off the rays of the sun at all until the weather begins to be pretty hot; and on the approach of the first frosty weather the leaves drop off so the needed sunshine gets through once more. My original plan of years ago was to have the vines "kill two birds with one stone"—that is, furnish the needed shade and also bear a crop of fruit.

By the way, it is some trouble to replace the wooden stakes when they rot off—say once in five or ten years. I have been thinking of a very light stake made of reinforced concrete. But then would come the problem of fastening the cross-pieces securely. Stakes of locust or cypress might be better and cheaper. A. I. Root.

DIGGING BEESWAX FROM A MINE

A Man Who Struck It Rich on the Pacific Coast

Recently while making an exhibit of honey and beekeeping equipment at the North Ashland County Fair, Nova, Ohio, Alvin Crittenden of that place showed me a piece of beeswax, concerning which he gave this interesting history. The wax was furnished him by a close friend, W. H. Calwell, Portland, Ore. The latter cut it from an original chunk in 1892.

The following story is vouched for by the above responsible persons:

In 1890-92 a man in the vicinity of Nehalem kept coming to town regularly with all the beeswax he could haul on a burro. When questioned as to his source of supply, he explained he was a wild-bee hunter. The amount he brought was so immense that suspicion was aroused sufficient to instigate a search. As a result a deposit of many tons was found buried deep in the earth, and on top of the deposit gigantic fir trees 500 years old were growing. The age of the firs and the depth of the deposit, together with the fact that the ocean has receded three miles from this point, lead to the belief that it is at least a thousand years since the wax drifted ashore at this place.

About the wax was evidence of shipwreck, and indented in it were hieroglyphs of strange design. This allows the supposition that an ancient ship had through misfortune drifted ashore here.

The sample which Mr. Crittenden showed me was rather black but in good condition. Maybe some brother beekeeper in the vicinity of Nehalem, Oregon, who reads "Gleanings" can give us some more facts on this rather odd bit of history. W. W. Barnhill.

Polk, Ohio.

DEALERS AND SPECULATORS

Why Established Honey Dealers Prefer Stable Prices. Folly of Price-Cutting

Until recently the writer has, to some extent, shared the probably common belief that most honey dealers naturally are interested in keeping the wholesale price of honey as low as possible; but in talking with one of our largest western bottlers recently some new ideas were received, and these again were strengthened by the writings of two large honey buyers in October "Gleanings," E. R. Root and Geo. W. York. Mr. Root tells how his company decided to boost the local sale of honey to prevent prices from dropping too low, and Mr. York makes one of the strongest appeals for co-operative marketing that has come to my notice.

Just why should dealers desire to prevent honey prices from dropping below the cost of production? Is it not because such men are business men and not speculators? The latter class is always attempting to "bear" the market when buying, and "bulling" it when selling, in order to gain as large a margin of profit as the traffic will stand. The real dealer is interested in building up a steady, permanent trade, and his margin of profit is, as far as he is able to control it, based on a percentage basis of the turnover; for that reason he is not interested in the speculative elements, but would greatly prefer stabilized prices that would assure him his necessary margin. Of course it is only human that any dealer wishes to buy for a little less than the market price, but the thinking dealer realizes that, if he can buy for less than the market price, his competitor can likely do as well, and perhaps better, and that therefore the market has fallen, and that instead of buying "below" market he is buying on a "lower" market.

Here, perhaps, is the answer to the question that has puzzled some of our producers who this year attempted to move honey by cutting prices, only to find that the demand if anything decreased. Dealers do not buy heavily on a falling market. A retailer may move his stock by cutting prices; a small producer also may do the same, but if large holdings are forced on the market at cut prices the dealers will fear further declines and will adopt a policy of watchful waiting, buying only what stock they need; while if the market is steady they are willing to buy large quantities to enable them to get quantity discounts. J. Skovbo.

Hermiston, Ore.

BEEKEEPING IN AUSTRALIA

How Lack of Pollen Sometimes Causes Loss of Many Colonies

Ninety-five per cent of Australian honey is gathered from eucalyptus trees of which there are many dozens of kinds, and some are in flower at all times of the year. Most of the apiaries are located in forests and along rivers or lakes. Migratory beekeeping is resorted to, though of late years more of the mountain beekeepers are moving their bees out to the drier earlier pollen-producing country for the purpose of securing early brood-rearing, cope weed and wattle being very early and heavy pollen producers. Some varieties of wattles are in bloom all through both winter and spring.

Our seasons run in cycles of four or five years, one year being a very bad one, two poor to medium and two good to bumper. Seldom or never do we get a year when the bees will not gather ample honey for their own needs, but pollen famine is the trouble. The summer and autumn of 1920 produced ample stores of honey but little or no pollen, with the result that but little autumn brood was reared; and in the following spring, before the spring pollen was gathered and brood reared, the old bees of the winter cluster died off, leaving hives with ample honey in the combs, many bee farmers losing up to four-fifths of their colonies. Experiments to produce artificial pollen have so far failed. Beekeepers are trying to save the combs of pollen stored during the good years and keep them until the droughts.

In a good season apiaries on good forest sites will average over 300 pounds per colony, and individual records of 700 pounds and over are often recorded. A good forest site in a good season can hardly, if at all, be overstocked, but occasionally a small waspy fly comes in millions and almost crowds the bees off the blossom. H. W. Raggatt.

Natimuk, Victoria, Australia.

FROM THE FIELD OF EXPERIENCE

NECTAR FROM VELVET BEAN

Bees Do Not Gather It in All Parts of the South

I notice an inquiry in August Gleanings from J. M. Sturtevant in Alabama asking about the velvet bean as a honey plant. My observations of this plant in Mississippi lead me to believe that it is not used by bees. It does produce nectar in great quantities, but this nectar has the most repulsive taste of anything I have ever put in my mouth. Perhaps this has something to do with the unwillingness of bees to take it. I have seen many acres planted to velvet beans, and although I have seen them profusely in bloom I have never seen a bee at work on them.

Dogwood is often mentioned as a honey plant in the South, but I am of the opinion that it produces no more nectar there than it does in the North. I have observed it dozens of times but have yet to see a bee taking nectar from the flowers.

Ithaca, N. Y. R. B. Willson.

Velvet bean blossom clusters, which are made up of individuals each of which is provided with a covering over the opening of the flower, protecting it against rainy weather, give us a peculiar opportunity to study its relation to honeybees.

Immediately following a rain the bees will begin work on this flower before nectar can be found in open blossoms. We have seen bees in usual numbers working on them from day to day and believe they gather nectar from them. The Mexican clover is also in bloom at the same time, and of course the honey stored at this time is a mixture of the two, and its acid taste and color are decidedly different from those of the honey stored immediately following the close of the velvet bean season. Our rainfall is very heavy, particularly at this season of the year, which fact has caused us to investigate the velvet bean with its rain-proof nature roof. J. Clay Dickman.

Bay Minette, Ala.

The velvet bean does well on the "Tifton" and "Norfolk" loam soils of south Georgia, and on these soils may be counted on for a surplus year after year. The interplanting of the velvet bean with corn enters largely into the farm practices of south Georgia, and the velvet bean is usually present in most localities in sufficient quantities to be of considerable value to the beekeeper. In my locality I can usually rely on at least one shallow super of chunk honey from this source. On the low sandy, swampy series of soils and on the higher sandy soils of this region I do not think one can depend so much on the velvet bean. I understand that the velvet bean is also a good honey plant in the red hills of middle and north Georgia, but I am not speaking from experience as to those localities. I doubt very much if the velvet bean would be of any value to Florida beekeepers, except north of Gainesville and west of Lake City.

The honey from velvet bean is inferior to honey secured during the spring honey flow. It has a peculiar acid flavor and is best sold in the comb. In my locality it blooms with Mexican clover and bitter-weed and is never secured absolutely pure. Such a blend makes a pretty article in the comb, but does not bring repeat orders when sold in the extracted form.

Mexican clover is the most important summer and fall plant to south Georgia beekeepers. It is a light-colored honey almost water-white in the comb and of fair flavor and quite superior to the velvet bean honey. It blooms from May 15 until killing frost in autumn, which usually occurs in this locality about the middle of November. It is impossible to eradicate this weed from cultivated fields. It furnishes a living for the bees all summer, and after cultivation stops in the fields it takes possession and furnishes a surplus during August, September and October. The velvet bean augments the surplus from this source during July and August.

Mexican clover honey can usually be secured blended with cotton honey during the month of July, but can only be secured in its purity during the month of October. At this season of the year it has almost matured its growth and blooms rather sparingly. The blossoms are open for a few hours in the forepart of the day, therefore no great amount of surplus can be obtained late in the season. The supers are usually removed and this late honey goes into the brood-nest. Where it is the custom to winter bees with all supers on the hive, many of which are filled with the low-grade fall honey, much velvet bean and Mexican clover honey find their way into the first spring extracting. I find it best to try to stock a locality to the limit so that very little if any of the velvet bean honey will be left over from the winter stores. I do not usually figure on marketing any honey stored in this locality after July 15, but leave it with the bees.

Glennville, Ga. W. C. Barnard.

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A HANDY SUPER LIFTER

A Device to Avoid Heavy Lifting, Made From an Old Wheelbarrow

Did you ever feel, when you stood in front of a hive of three or four stories, heavy with honey, that you would be glad of some plan by which these upper stories might be lifted off without almost breaking your back so that you could get at the brood-nest for the purpose of requeening or clipping? Perhaps you are a professional man or backlotter, and not accustomed to heavy lifting. Perhaps you are an old man, a woman, a young miss, or a housewife who is unable to lift heavy weights, with no brother, husband or son handy at the time. If you belong to any of these classes you might appreciate a lifting-device, and at the same time something that would carry a load from one part of the yard to the other, or carry it to the honey-house.

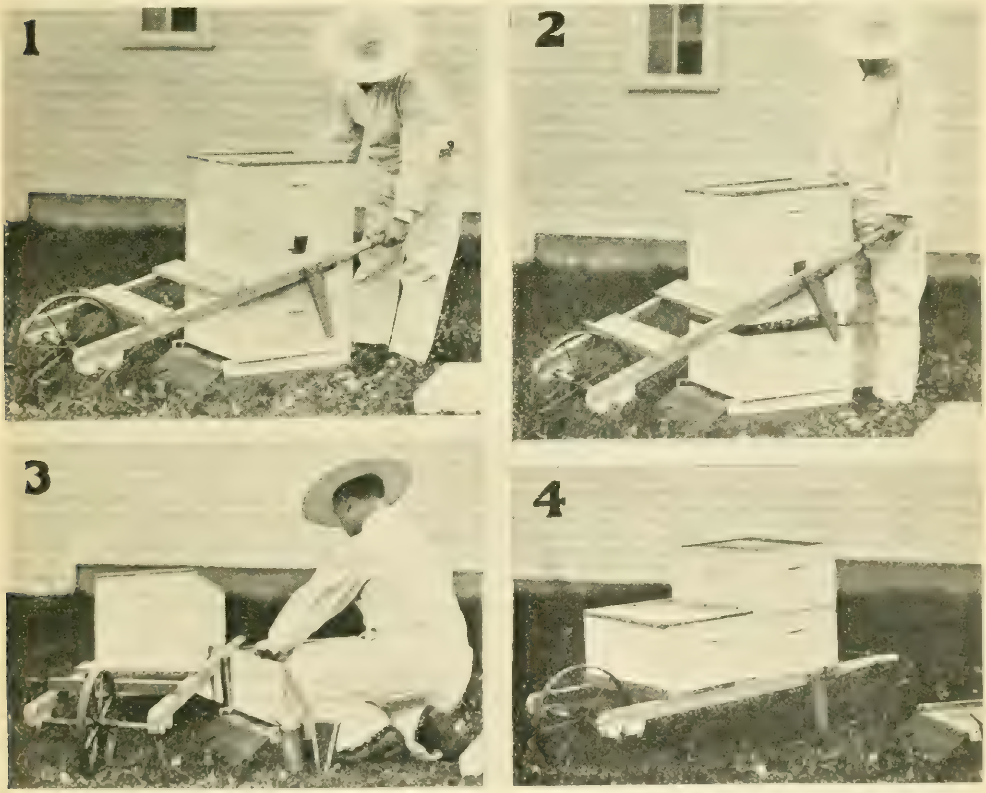
The four illustrations herewith will explain the scheme. Perhaps you have a wheelbarrow that has gone to pieces except the wheel. If you happen to be handy with tools you can make up a frame of hard wood like that shown in the illustration. The two side rails should be secured by the cross-braces far enough from each other so as to admit between the handles an ordinary ten-frame hive-body, or, more exactly, any standard hive that you may be using.

To use, back the wheelbarrow up against the skyscraper so the two handles will come astride the hive. Slip a wooden wedge between each of the side arms and the hive-body and then hook the cross-brace across the handles as shown in Fig. 1. With a hive-tool loosen the two parts of the hive and then lift up, as shown in Fig. 2. Swing it around to one side as shown in Fig. 3, when you will be free to do anything you please with the lower part of the hive. The supers in the mean time will be held high and dry where they can not crush nor break the frame bottoms. When the work is finished, swing the two upper stories back to their place. Push down on the handles, when the barrow is free.

You will observe in Fig. 4 that it is possible to use the same outfit as a wheelbarrow to carry loads.

While a strong man or a professional beekeeper might not need anything of this sort, yet if he happens to have a weak back he may find the outfit very handy.

H. H. Root.



(1) The handles of the wheelbarrow hive-lifter are slipped over the supers, and the wedges are put in the hand holes. (2) As the handles are raised, they engage the wedges, and the supers are lifted off the hive. (3) The lifter, together with the supers, can then easily be moved where desired, thus giving access to the brood-chamber. (4) The wheelbarrow hive lifter used as an ordinary wheelbarrow for carrying supers to and from the honey-house.

FROM THE FIELD OF EXPERIENCE

HONEY BIRD OF EAST AFRICA

How this Curious Bird Leads Men to Honey in Order to Obtain Its Food

One of the most interesting and curious birds mentioned by Theodore Roosevelt in his "African Game Trails," is the honey bird, the habits and peculiarities of which he describes in detail.

"While on safari to the 'Nzoi I was even more interested in honey birds which led us to honey, than I was in the game," says he.

This special interest and attention, he tells us, was due to the fact that John Burroughs had particularly charged him to "look into this extraordinary habit of the honey bird; a habit so extraordinary that he (Mr. Burroughs) was inclined to disbelieve the reality of its existence. But it really does exist."

Mr. Roosevelt first mentions seeing the bird on his visit to Juja Farm, near Athi Plains, East Africa. In this reference he speaks of it as "the honey guide, the bird that insists upon leading any man it sees to honey, so that he may rob the hive and give it a share."

Later while hunting in the Sotik, a region abounding in big game, including lions and rhinoceroses, he gives "our first characteristic experience with a honey bird, a smallish bird, with its beak like a grosbeak's and its toes like a woodpecker's, whose extraordinary habits as a honey guide are known to all the natives of Africa throughout its range. Kermit had killed an eland bull, and, while he was resting, his gun-bearers drew his attention to the calling of a honey bird in a tree near by. He got up, and as he approached the bird it flew to another tree in front and again began to twitter. This was repeated again and again as Kermit walked after it. Finally the bird darted around behind his followers, in the direction from which they had come; and for a moment they thought it had played them false. But immediately afterward they saw that it had merely overshot its mark, and had now flown back a few rods to the honey tree, round which it was flitting, occasionally twittering. When they came toward the tree it perched silent and motionless in another, and thus continued while they took some honey—a risky business as the bees were vicious. They did not observe what the bird then did; but Cunninghame told me that in one instance where a honey bird had led him to honey he carefully watched it and saw it picking up either bits of honey and comb, or else, more probably, the bee grubs out of the comb, he could not be certain which. To my mind no more interesting incident occurred at this camp."

"The natives believe that misfortune will follow any failure to leave the honey bird its share of the booty. They also insist that sometimes the honey bird will lead a man to a serpent or wild beast; and sure enough, Dr. Means was once thus led to a rhinoceros. While camped in the 'Nzoi the honey birds were almost a nuisance; they were very common and were continually accompanying us as we hunted, flying from tree to tree, and never ceasing their harsh chatter. Several times we followed birds, which in each case led us to bee trees, and then perched quietly by until the gunbearers got out the honey—which we found excellent eating by the way."

On one occasion Kermit stayed to see what the honey bird did after they left the tree.

"The boys had smoked out the bees, and, when they left, the tree was still smoking. Throughout the process the honey bird had stayed quietly in a neighboring tree, occasionally uttering a single bubbling cluck. As soon as the boys left, it flew straight for the smoking tree, uttering a long trill, utterly different from the chattering noise made while trying to attract the attention of the men and lead them to the tree; and not only did it eat the grubs, but it also ate the bees that were stupefied by the smoke."

Warren, Ohio. James A. Brown.

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STINGLESS BEES OF MEXICO

How the Natives Find Their Nests and Rob Them of Their Honey

The following incident related to the writer by Thos R. Worsham, an old gentleman who ranched for years in Mexico, may be of interest to your readers:

"Did you ever see stingless bees? I have seen them down in Mexico. The Mexicans call them 'avispas.' They don't look like bees, but more like large flies.

"One summer back in the '70's, I was hunting wild turkeys in Cerrabo, Mexico, near the Sierra Madre Mountains, with a Mexican. We had stopped beside a small stream, and were hidden in a thicket. There were lots of turkeys, they being so thick you could almost kill them with sticks.

"Suddenly the Mexican cried '¡Ay, una avispa' ('There's a bee!), pointing at what looked to me like a very large fly, as it rose from the water's edge. (I wouldn't have noticed it.) It flew straight and low, and so slowly that the Mexican, following it, could keep it in sight. I ran after him the best I could, and must have gone a quarter of a mile (it seemed like a half mile over the rough ground), when I came to a thicket where he had stopped. There hanging from a limb about six feet from the ground, I saw what looked like an enormous wasp nest, about four feet long and large around.

"The Mexican cut into it, and it contained some of the prettiest, clearest honey I ever saw. It was fine, too. The priests call it 'virgin honey.'

"And the 'avispas' did not sting at all!"

I enjoy every number of Gleanings.

Laredo, Texas. Robert Hardin.

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CAN A WOMAN KEEP BEES?

A System of Management Worked Out to Avoid Heavy Work

Ask that question of Miss Nina Scott, Henry County, Missouri, and you will not only get an emphatic "Yes," but you will also get a look which, translated, would mean nothing milder than "Why not, I'd like to know?" For Miss Scott speaks from experience.

"Whatever there is to do about an apiary, a woman can work it out so she can do it herself, if she really cares for the bees. Of course a great deal of it is quite hard work, but no harder than washing, or ironing, or sweeping. I would rather spend four hours lifting one frame after another, looking for queens and clipping them, than to spend four hours sweeping.

"Beekeeping is agreeable work for a woman, I think. It is something she can manage alone and do all the work, if there is nobody to help. I do all the work about my bees, except that my sister runs the extractor for me. There is a good deal of heavy lifting, and that is hard for a woman, but she can learn to adapt the work to her strength."

The real reason Miss Scott says "Pooh!" when you mention the hard work connected with beekeeping, if I judge rightly, is because she is so interested in what she is doing that she doesn't know that she is working. To her, beekeeping is more like play than work. Here is how she looks at it:

"Beekeeping is the most fascinating work in the world. Bees are unselfish and peaceable. They live and work for the colony. They are sensible; if they are running out of honey, they cut down on brood-rearing. If their queen is failing, they start queen-cells to raise another. A bee tamping pollen down in a cell with its hind feet is funny, and so is a swarm coming out. And there is always something to learn about bees."

A year ago, before the Missouri Apicultural Society, Miss Scott told some of her first experiences with bees. "I learned what little I know from books, magazines and experience—mostly experience," she said.

"I didn't get along very fast. I almost had to take in washing to support the bees the first two years. I expected the most impossible things; I thought the white clover honey flow lasted all summer, and expected the bees to draw out full sheets of foundation when there was no honey flow. But I experimented and learned. I tried artificial cell cups and grafted larvae for queen-cells, and so on. I was prouder of the first artificial cell cups, with grafted larvae, that I got the bees to accept and build out, than I have ever been of anything since."

Then the beekeepers, old timers and would-be beekeepers asked questions, "How do you place your hives? How do you keep records? How do you control swarming? Etc., etc." Answers were forthcoming. And that those who did not hear her may have the benefit of her experience, I am setting down some of the main points responsible for Miss Scott's success:

"I use ten-frame hives, and full sheets of foundation wired, in both brood and extracting frames. In the supers, I use eight frames to a ten-frame super, spacing them wide apart so that the combs will be built out thicker. Then they are easier to uncap. My extracting-supers are half-depth; two of them are as deep as a hive-body, and they are heavy enough. I use some full-depth supers to get foundation drawn out for next year's increase and to replace my crooked or unwired combs. Full-depth supers are too heavy. My hive-stands are made of pieces of 2 x 4-inch stuff, three and one-half feet long, set up on edge. Fifteen-inch cleats are nailed on the ends to hold them on edge and the right distance apart.

"Each hive-stand holds two hives, facing south. Hive-stands are about 34 inches apart. That makes two colonies just the right distance apart. Then there is a wide space, then two more hives on a stand. I think the bees can more readily find their location when the apiary is broken up into groups of several hives each.

"To keep mice and moles from working up under the hives, I put a piece of tarred felt roofing down beneath each hive-stand. Let this extend several inches beyond the stand, to keep down the grass that can not be cut with a lawn-mower."

Every hive in the apiary has a number. Miss Scott keeps a colony record. The numbers for hives are cut out of cardboard, each piece of cardboard about the size of a postal. These cards are dipped in linseed oil, then dried, painted white, and the number is stenciled on the card with black paint. A screw eye is put into the back of each hive, and the number is hung to this by punching a small hole in the card.

In the record book there is a page or so of space for each colony. Take Colony No. 27, for example. In the book is this record:

FROM THE FIELD OF EXPERIENCE

"April 26—Clipped queen. Colony O. K.

"June 2—Swarmed. Queen-cells and brood to stand No. 51.

"July 15—Extracted 48 pounds.

"October 2—Extracted 30 pounds; 78 pounds surplus for year.

"October 15—Colony weighed 76 pounds."

"If they had weighed less than 75 pounds, I would have fed them till they weighed 75," Miss Scott explained.

When a colony swarms, the hive, with queen-cells and brood in it, is taken away, and the swarm is hived in a new hive at the old location. Thus, the old queen is still "doing business at the old stand." This plan of moving the old hive to a new stand gives the field bees to the swarm, and reduces the colony enough so that there are no after-swarms. If the colony is still too strong, the bees are shaken from a few frames into the new hive. The old queen is with the swarm, and, to keep records straight, her number is taken from the old hive and put on the new one at the old stand. Thus, the old queen keeps her colony number.

This plan of reducing the strength of the old colony is a big step toward swarm control—such a big step, in fact, that there is practically no trouble on this score. As an added precaution, however, every queen is clipped in the spring; the first year the left wing, next year the right wing, and the next year both wings. Miss Scott does not believe that a queen exhausts herself in one year, and therefore doesn't requeen every year. One colony, with a two-year-old queen, was the best in the apiary in 1920. The same was true in 1915 and 1916. As far as requeening goes, the bees themselves are allowed to do most of it. "They will do it when they get ready," says Mrs. Scott. "They usually keep a queen two years; sometimes three.

"When we want to increase the number of colonies, we make the increase from our best queens; hence the need of records. It is just as important for a beekeeper to keep records as for a dairyman to keep records."

"But I am afraid of stings," says a timid one. "How can I protect myself?" Miss Scott's answer is to "wear overalls or unionalls. Also, wear a good bee-veil. A black veil is easier on the eyes than a white one."

Getting the swarm into a hive is no end of a job for the beginner. Miss Scott's method is simply to let the swarm hive itself. The queen is clipped, so when she comes out with the swarm she can not fly and will crawl around on the grass or weeds. The swarm in the meantime will settle, perhaps on a peach tree. This gives a chance to put the queen in a mailing cage, and the cage is put in a shady place until needed. The old hive is set aside and a new one, fully equipped, is put in its place. The swarm, missing the queen, comes back to the hive (the new hive), and the queen when released goes in with them. Then the old hive is moved to a new location. What could be simpler—to the one who knows how? E. A. Kirkpatrick.

Narberth, Pa.

HONEY PRODUCERS' LEAGUE

Notes and Announcements Concerning the American American Honey Producers' League

The officers of the League are planning to cater to those who are anxious for a "regular old-fashioned beekeepers' talk-fest and good time," as well as the business men who make up the principal membership, at the St. Louis meeting on February 6, 7 and 8. The Hotel Statler has been designated as headquarters, and all meetings, including the annual banquet, will be held there. Those who wish to take rooms in the same hotel are requested to make reservations at as early a date as possible, as St. Louis is filled with guests during February. Numerous hotels and boarding houses at moderate rates are also available in the general vicinity.

Honey sales may be stimulated by offering a recipe book as a premium to each purchaser. The best thing of this kind ever issued is the one recently published by the American Honey Producers' League—21 pages on the keeping of honey, and its use in bread, cakes and candy-making. Honey producers should put this into the hands of every purchaser.

Order from S. B. Fracker, Secretary of the American Honey Producers' League, Capitol Annex, Madison, Wisconsin. The booklet can be secured at the following rates, postage extra, shipping weight about six pounds for each 100 copies: 20 copies, $1.25; 100 copies, $4.50; 1000 copies,$33.00. Ten per cent discount is allowed to affiliated members of the League. The name and address of the purchaser will be printed on the booklet without additional charge in the case of orders for 200 or more copies.

The League Bulletin, official publication of the American Honey Producers' League, is now being mailed each month to the affiliated members of that organization. It is sent out from the secretary's office, American Honey Producers' League, Capitol Annex, Madison, Wisconsin.

According to the November number, affiliation with the League carries with it the following privileges: 1. Free subscription to the League Bulletin which may be expected monthly from now on. Marketing reports are to be included after this issue. 2. Ten per cent discount on copies of "Honey, How and When to Use It," a recipe booklet for distribution to customers. A single order for 200 of these booklets will save enough to pay the affiliation fee. 3. The right to use warning posters, offering a reward for the arrest and conviction of thieves and marauders in apiaries of members. 4. Assistance in the adjustment of claims arising from suspected fraud and misrepresentation. 5. Legal aid in opposing the enactment of state laws and city ordinances injuring beekeeping. 6. Share in an organization which has advertised honey nationally, has distributed 18,000 honey recipe booklets to all parts of the United States, has supported the recent advance in the tariff on honey, reducing competition from cheap foreign honey, and has upheld beekeeping interest in city councils, state legislatures and the United States Congress.

Individual membership at the dollar rate is open only to members of affiliated organizations. If you are interested, write the secretary of your state organization. The League will send you his name on request.

S. B. Fracker, Secretary-Treasurer.

Madison, Wis.

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WINTERING IN DAMP CELLARS

Providing Opening at Top of Hives to Allow Escape ot Moisture

Nearly 30 years ago I was persuaded to winter about 100 colonies of bees in an old pole and earth root cellar at an outyard, instead of taking them 15 miles to my own cellar where I had been having fair success in wintering. I fixed up the old place, putting in a good-sized ventilator in the roof and piled the bees in, using pretty nearly every foot of space.

In the spring I had 60 hives full of moldy combs, dead bees, honey and water.

Some were advocating tight sealed covers at that time; but it was my last, and I have not had a moldy comb since, for I have drawn my flat covers forward, leaving not more than one-fourth of an inch space intentionally at the top and back of the hives wintered in the cellar. A damp cellar is not a bugaboo to me, as with some that have complained to me until I have explained my way of ventilating the bees.

I once saw in my cellar water dripping out of a hive which was the bottom one in a pile of four and between other piles of four. It was rather hard to get at, as there was no room at the back of them. I said to myself, I have neglected ventilating that hive, so the pile must come down; and sure enough it had a tight sealed cover. I ventilated it and returned the pile as it was before. In 36 hours the water had disappeared from the entrance and it appeared as dry as the others. (See Editorials.)

Pierpont, Mich. Walter Harmer.

ENTRANCES CLOGGED—WHY?

Unusual Weather Conditions Cause Dead Bees to be Left in Entrance

Last winter we had two yards of 100 and 175 colonies respectively that were well packed in new single winter cases. The entrances to the hive proper were five inches by a half inch, and a bridge ten inches wide and two inches deep leads to the outside case. The entrance in the outside case was closed down to depth of bridge by one-half inch in width. Although there was no snow to block the entrances in any way, we found a number of colonies with these large bridge spaces crammed with dead bees, the small outside entrance being plugged solid in some cases. We promptly removed all the gates used to contract the outer entrance for winter, as we felt it would be taking too great a risk if a heavy snow storm should come while the bridges were filled up with dead bees.

I attribute this unusual condition altogether to the fact that the bees, being able to move around nearly every day (most of the colonies were very strong in the fall), cleaned out all their dead bees and carried them into the bridge passageway, but it was too cool to allow them to take them outside, so they gradually clogged these large spaces. If it had been severe weather the dead bees would have been left under the combs, on the bottom-board; and, on the other hand, if there had been days warm enough for a flight, the dead would have been carried out at once. J. L. Byer.

Markham, Ontario.

* * *

PEDDLING AT WHOLESALE PRICES

How This Folly Lowers the General Market for Honey

I sell directly to the retail stores and sell practically all of it within the county. This year I started with the 5-pound pail at $1.00 and the 10-pound pail at $1.90. I should have kept it at those prices probably, but some outsiders came in and peddled it out at less. I have now put the retail price at 90c and $1.65. The storekeepers get 20c for selling the 5-pound pails and 40c for selling the 10-pound pails. I put an advertisement in the local papers giving prices and the stores where it can be bought. Two years ago Smith & Son, Jefferson, Iowa, sold 1200 pounds of my honey, and the same year a meat market in Churdan, Iowa, sold 1200 pounds. The sales were rather slow to begin with this year, but are improving fast now. When I have an advertisement inserted in a paper I always give the editor a 5-pound pail gratis. Geo. M. Thomson.

Grand Junction, Iowa.

SIFTINGS

J. E. Crane

THAT is a most instructive editorial on page 695 of the November issue, on the amount of "Moisture given off by bees during winter." According to this editorial, when a colony consumes 17 pounds of honey during the winter it would exhale 1/12 of a pint of water a day, or approximately 1⅓ ounces, or 582 grains of water. At average winter temperatures here in the North, one cubic foot of air contains about one grain of water. If, when taken into a hive, the temperature is raised to 50 degrees, it would, if saturated, hold about four grains of water, a gain of three grains. As a result it would require 182 cubic feet of air to take up all the water given off by the bees in a day, or eight cubic feet of air to be warmed up by the bees and pass through the hive for each hour of the day. This looks like a rather expensive way to get rid of it. The point I tried to make in the article referred to was that it is more economical to sift the moisture of the hive through warm porous packing than to get rid of it by passing a current of cold air through the hive. In ordinary practice, I believe the moisture generated by the bees leaves the hives in both ways. When we have porous packing above the bees, more or less water passes out at the entrance, as is shown by the frost that collects about it. Also where dependence is upon a circulation of air to rid the hive of moisture, more or less is absorbed by the walls and cracks of the hive and passes off. (See Editorials.)

* * *

One feels like congratulating Edw. A. Winkler (page 696) on his great crop of clover honey; but, if the production of honey continues to increase in the future as in the past few years, and prices go much lower, I hardly see how those of us who live in less favored regions can make the business pay. However, it does not pay to be pessimistic. If prices go very low a multitude of people who now feel they can not afford it, will learn to use it, and the demand be greater than the supply.

* * *

Our friend, J. L. Byer, on page 702, discusses the hive question in a sensible way. Mr. Byer is not a large man, but he does some tall thinking. Many beekeepers are like some other folk—they like to let others think for them. So we have had a good many fads in the past 50 years, only to pass as they came into use. Some prominent beekeeper makes a statement and the crowd follow, whether it is a large or small hive, reversible frames or what not. While Mr. Dadant is today advising large hives, J. J. Wilder is advising the use of small brood-chambers. There is little doubt but that a large brood-chamber is better for certain localities and purposes than a small brood-chamber. The same can be said of a small one. Nothing pays a beekeeper better than to do his own thinking, and every yard of bees should be, in a small way, an experiment station.

Mr. Byer, page 725, speaks of different methods of requeening and lack of success in cutting out all queen-cells but one. I, too, have failed in doing this, as I frequently found such colonies would swarm out and leave the old colony queenless.

* * *

How it quickens one's pulse and stirs his ambition, to read the account, given on page 703, by E. R. Root, of the operating of 10,000 colonies of bees by one family, producing more than a million pounds of honey in a single season. My, but it is great! But when I think of our short seasons, our uncertain flow of nectar, long cold winters and how difficult it would be to do such a large business in the North, I fall back on the statement of a very wise man nearly two thousand years ago, that "Life consists not in the abundance of the things one possesses." But we will rejoice that some one can do the great things.

* * *

A. I. Root's reference, on page 735, to artichokes as a farm crop, reminds me of my experience with them many years ago. I planted half an acre and used the roots to feed a cow during the following winter. As the roots do not keep well in an ordinary cellar, I stored as many as I wanted to use during winter in my barn and let them freeze. When I wanted to use them I took enough to the house to thaw out for the next day. Cattle are very fond of them, and I found the artichokes saved me a large bill for meal.

* * *

George Harrison, on page 706, gives some good points in packing hives for winter. However, when he advises to place the packing in one-half inch trays, made of half-inch lumber, I can not help thinking that packing can be handled much more conveniently and quickly if placed in large sacks. We formerly used trays but have long since discarded them for bran sacks.

* * *

On page 721, Edw. Hassinger, Jr., says, "We are very sure that our health in general suffers from bee-sting poison." While this may be true in some cases, I believe, as a rule, the poison of bees does no permanent injury to those who care for them. It does not appear to be a cumulative poison and is quickly removed from the system.

Seeing California From a Roadster

CONSTANCE ROOT BOYDEN

(Stancy Puerden)

THE busy man had to make a business trip to San Francisco early in October and decided to drive his little roadster from Los Angeles there and back, nearly a thousand miles, take me along and call it a vacation for us both. Some of you who have not yet visited our Golden State may not know that it has thousands of miles of the finest roads in the world, smooth, wide roads which are practically dustless in the dryest season of the year, roads of moderate grades on which you can drive from San Diego to Portland, Ore., without going out of high gear, although you cross whole mountain ranges.

Forgive me, if I seem to boast a little now and then. Perhaps it is to keep up my spirits, for in my native state, Ohio, October is a very beautiful month with its maples turning to crimson and gold. When I think of walking through the crisp fallen leaves in that soft, golden light which sifts through the remaining leaves on the trees after the first tonic frosts, I have to look hard at our glorious mountains and talk fast about all the advantages of life in California to prevent something like homesickness. But this beautiful drive through our chosen state has taught me that somewhere in California one can find almost any kind of scenery or climate he wants, although we have made just a beginning of exploring.

We decided to go by the coast route and return by the inland and we therefore left our San Gabriel Valley early in the morning, crossed the great arroyo bridge and passed through the San Fernando Valley with its rich farming country and many thriving little cities, of which I have written in former articles, took the Ventura boulevard through a pass from which we emerged to look down into a level, fertile valley in Ventura County. The map shows Ventura and Santa Barbara counties largely covered by mountain ranges with a comparatively narrow strip of fertile, arable lands near the coast. But that ‘‘strip’’ is most attractive with great fields of beans, sugar beets, lemon groves, flowers, grazing stock and more beans. I didn't suppose so many beans were needed in the world as we passed through Ventura and Santa Barbara counties. There were little navy beans and lima beans, both large and small. There were beans green and growing, dry beans, cut and raked into hills in long rows, and beans being threshed. It recalled to memory ‘‘Bean porridge hot and bean porridge cold.’’

There were beans growing on mountain slopes which looked too steep for cultivation, and there were beans growing on the beach just a few feet from the waters of the Pacific. It must be a great locality for bees in the blossoming season, for I am told beans yield a very fine honey. Apparently the frosts of last winter had not been so destructive as in our locality, for the tender lemon groves seemed untouched and there were tall scarlet hedges of geraniums unhurt.

FOR many miles the road ran along the beach with low ranges of mountains close on the right, the railroad sociably close to the highway. When on a motor tour with the busy man in the East I have usually sat with a ‘‘blue book’’ on my lap, ready to read descriptions of roads in order to make sure to take the right turn. That is quite unnecessary in California. All along the coast route were signs ‘‘El Camino Real’’ (The King's Highway), for this road was laid out by the old Spanish padre, Junipero Serra when he and his successors established the many missions for the Indians along the coast. The only places where one might temporarily miss the road are the towns where the signs are apt to be omitted. In the country there are few crossroads and El Camino Real is an easily followed path up the state.

It was on the first day of our trip that we saw a beautiful mirage. Across the level floor of the valley, far ahead of us and to the left, was a glimpse of a clear lake which reflected the color of the sky. As we approached we could see eucalyptus trees which grew on its banks mirrored on the still surface of the water. There was a house under the trees, and I thought it was a beautiful place to live. But when we were opposite, or perhaps a little beyond, although house and trees were there the lake had disappeared, but miles ahead was another which also vanished when we passed. We saw much the same effect in the San Joaquin Valley when we were coming back by the inland route.

The coast route is historically interesting because of the old missions and the Spanish influence which is evident in many of the older towns. We passed a number of vast old Spanish ranches which are being subdivided and sold.

We drove on and on along the beach enjoying all the pleasures of a sea voyage with none of its discomforts, for we acquired amazing appetites, and you know some of us unfortunates lose not only our appetites but the acquisitions of former appetites when on the water.

We resisted the temptation to stop in beautiful Santa Barbara for the night and after some distance reluctantly left the ocean and climbed through Gaviota Pass, which took us into narrow Santa Ynez valley in the heart of which we finally stopped for the night at a little hotel.

Many motor tourists camp on the way, but I would wish to be well enough acquainted with the road to pick the camping ground in advance. Some towns provide pleasant camping grounds with shade, water, fuel, a little provision store and all conveniences. But the camping site in other towns seemed to be selected because it was a location good for nothing else, with no attraction nor conveniences and no privacy. We were fortunate in finding comfortable, clean little hotels, with rooms at very reasonable rates, and we preferred to take most of our meals at restaurants. Just as a matter of information let me state that the busy man estimates my going with him cost less than $5.00. You see no more gas was required for two, and some of the hotels charged nothing additional for two in a room while others charged only 50c extra. That, of course, does not include the time we spent in Berkeley, across the bay from San Francisco, for we were entertained there at a private home.

EARLY in the second day of our trip we encountered the only unpleasant bit of our whole ride. We had been told to expect a detour of a few miles, but did not know the detour was in a mountain pass. The mountain passes on the state highways are generally a delight as the roads are so perfect and the grades so gentle that one can keep in high gear, as I have remarked before. But this detour took us over a narrow, deeply dusty, bumpy, unsafe-looking road with steep grades. I suspect the scenery was beautiful, although that is not what sticks in my memory. In spite of the busy man's assurance that there was no danger I sat tense, perspiring profusely, although not with heat alone, expecting momentarily that the edge of the narrow road would crumble and let us go hurtling down into one of the deep gorges when we had to turn out for the great, heavily laden trucks with trailers which were coming down with materials for the construction gangs on the new road. We happened to be going in a direction which necessitated our turning out instead of hugging the mountain. We climbed and climbed and I rather envied the passengers on the near-by train which took a short cut through a tunnel.

While we were waiting on an extra-wide ledge to let several trucks go by and incidentally cool the water in the radiator, for that truck-impeded mountain detour forced us into second gear, a man came along and pulled up to warn us of more trucks coming around the curve. The busy man asked him how much more of the bad road there was. "Oh, it isn't far," he said, and then, letting his eyes wander to me he seemed to wish to be polite and reassuring to the lady and added kindly, "It's a pretty d— short distance."

He was right, we regained the good road at the summit a few yards beyond the curve and soon emerged into the valley through which runs the Salinas River. The coast route is just one valley after another.

I CAN'T remember all the superlative points of excellence of the various valleys, counties and towns through which we passed. I remember the hotel proprietor in the Santa Ynez valley said: "This is God's Country. It has the finest climate in the world and there is absolutely nothing which will not grow in this soil with irrigation." I am beginning to believe that "God's Country" is a state of mind rather than a locality and that all good westerners from the Rio Grande to the Canadian boundary live within it.

San Luis Obispo County is said to be the richest unirrigated county in the state. Other localities are superlative for certain crops, fruits or stocks. It is a poor place in California which has not its superlative. I suspect in Death Valley there are placards calling attention to the fact that it is the lowest spot in the United States, the hottest, the dryest and perhaps the least crowded.

We kept close to the Salinas River all the second day and although the weather was rather uncomfortably warm for driving, between four and five in the afternoon it turned suddenly and surprisingly cool and we were wearing winter coats by the time we reached Salinas where we decided to spend the night. We were taking three days for the north-bound trip as we were both very tired when we started. One does not have to be a resident of California very long to learn that sudden cool weather generally means rain, but I was surprised in the night to be awakened by what appeared to be lightning, and when I heard unmistakable thunder I awakened the busy man to hear a genuine Ohio thunderstorm. It was great fun in the morning to hear the old residents talk of that "dreadful thunderstorm which shook the earth." The hotel clerk assured us it was "very unusual," that although he had lived in California 20 years he had never known a thunderstorm like it before.

STARTING from Salinas early in the rain-freshened day we decided to leave "El Camino Real" and go to Santa Cruz in order to drive through the Redwood forests in the Santa Cruz mountains. We passed through Watsonville, the apple city, with its great orchards spread over the valley and running up into the foothills. I don't believe "apple blossom time in Normandy" can be any more beautiful than in the region around Watsonville. I am not yet prepared to state that any California apple has quite the flavor of an Ohio-grown Northern Spy, but there are very fine apples here, much finer than the western apples one buys in the East. I imagine the reputation of California fruit suffers from the fact that it is shipped such a great dis-

(Continued on page 809.)

Beekeeping as a Side Line

Grace Allen

MOST of this Sideline material was written aboard train, part of it on the way across the great plains to Denver, some of it on the way back. It was so short a stay there, so brief a visit to a sister, not seen for years, that there was no time to look up Colorado beekeepers—except for the trip to Boulder, where we visited Wesley Foster's plant, and were hospitably dined at his home; so hospitably, in fact, and so generously, that the friendly talk following the good dinner made it too late to drive out to any of his yards. But they drove us up Flagstaff Mountain, my first mountain drive, where to my unaccustomed eyes the world seemed spread out at our feet in the brilliant Colorado air.

Mr. Foster and I ran in on Prof. T. D. A. Cockerell, Entomologist of Boulder University, who showed us his wonderful collection of bees; more than 700 species found in Colorado alone, besides uncounted others from all parts of the globe. Such a collection! All sizes, from some much larger than our drones down to one from Africa (I believe) so tiny that a magnifying glass would be required to distinguish the detail. And such colors! Many were banded like our Italian honeybee, only more gaily, with brilliant bands. Others were of solid colors — blues, greens, yellows, browns, shades I cannot name, irridescent, shimmering rainbow hues. There is no other collection in the world to equal it, I was told —not by the modest Professor himself, but on excellent authority. When he is through with it, it is to go, he told us, to the National Museum.

On my last day in Denver we drove by winding mountain roads up to beautiful Echo Lake, stopping towards the top to put chains on the wheels, as we had come into 8 or 10 inches of snow. Yet when we stopped, the men made a fire and we had a fine beefsteak fry, in a pine woods at a height of 10,600 feet, with snow on every side.

Coming back east, I met Mr. Allen at St. Louis, and on our way to Chicago, we stopped at Hamilton, Ill., where we were royally entertained at the home of C. P. Dadant and his pleasant family. There were beautiful drives along the Mississippi, an interesting visit to the prosperous plant of Dadant & Sons, a call at the home of Mr. Pellett, happily recovering from a serious illness, and a tour through the great power house connected with the famous Keokuk Dam. At Chicago, visiting another sister, the time was again too brief to look up beekeepers. We reached home just in time to get this copied and rushed off.

The rest of this Sideline Department for December, 1922, I am going to indulge myself in the whimsical desire to address you all directly, as in a personal letter. Thus:

Dear Sideline Friends of Gleanings:

When one comes to the end of a thing, he naturally stops a moment to look back. Looking back now across my days with Gleanings I pass in memory over eight years, back to August, 1914, tragic summer of a tragic year. A prince was shot. Immortal little Belgium faced a whirlwind and saved the world. France flashed to battle line. England crossed the Channel. Earth was a flame.

It was during that overwhelming summer that I began writing for Gleanings. Before that first devastating shot was fired, I had done the first article and the first little verses. Great emotions swept all our hearts during those swift incredible days; we had all, later, engrossing war activities; yet the steady enduring accustomed occupations went quietly on. Down in Tennessee, Beauty still walked the hills, there were roses and hollyhocks and mocking-birds, courtesy and treasured traditions. As most of you went your accustomed ways, apiarian and other, I went mine, happy with the bees and the new pleasant relation with Gleanings.

But I was no prophet in August, 1914, I caught at that time no slightest glimpse of the long incredible cruelty nor the world-engulfing scope of the war. Nor did I even glimpse the delight and satisfaction to come to me through Gleanings, from the unguessed beautiful friendships to be born in its columns. They came on together, the terrible far things and the beautiful near ones.

November, 1918, ended the war, setting its length at a few months more than four years. Still, in peace as in war, bees sought clover blossoms in Tennessee and our hearts knew the quiet serenity of living among gentle people; and still, through the columns of Gleanings, the pleasant new friendships came and the old ones grew.

Now, December, 1922, brings another lesser ending, that of my connection with Gleanings, setting its length at a few months more than eight years—four years of war, four years of peace.

Why am I leaving Gleanings, you ask? I might say, for that best of all reasons, Because. (Bee-cause, someone would surely amend!) But it is really like this. That night last summer when I stood beside my loved Mother in a room in Memphis that had suddenly become unendurably silent, with the heavy unbreakable stillness following the last breath of a loved one—an only brother taken at thirty-one with pneumonia —that night, and numb dumb days that followed, left me inexpressibly tired, wearied with unutterable emotional weariness. I could not write. I was empty, somehow; completely empty; and sitting down, alone, haunting hours came persistently back to be lived over. Then another thing (of course, the deciding one); don't you think women have some sort of mental antennae that somehow reach out and sense things? Well, one autumn day I wrote the Editors that my mental antennae sensed that this Department was their despair. (Remember their desperate and futile effort of 1921 to swing it into something practical? Remember, this past spring, the "irate gentleman" who shooed me gently back from the age of Augustus to 1922? Well, you see, he is one of the Editors. I just don't stay put in proper departmental limits. And that is hard on Editors, even the patient, courteous Editors of Gleanings.) So I said if they would like this Department discontinued, it would be very easy, because of my weary-heartedness, to stop. Sure enough, they admitted they did have plans for some changes, and if . . . And so . . . See?

And now, in parting, I wish that I might lay before each one of you who have stretched such friendly hands to me in these past eight years, my tribute of appreciation for the gifts you have brought, the fair, rare, high gifts of the spirit—the heartening word, the chatty beekeepery letters, the joys shared (and the sorrows), the friendliness, the great unexpected friendliness. I should almost like to name them over one by one, these beekeeping friends, to offer frank and open thanks for this great gift of friendship;—the queen-breeder from Texas, who once shared with me his fine enthusiasm for a lovely little child; another Texas man who sends extra stamps in his friendly letters, lest others forget, and who is coming to see us when they strike oil: one from the far northwest whose Omar Khayyam, loved in college days, turned to dust in his heart when his boy went off in khaki (the pity of it—that sometimes loved beauty fails at last, like del Sarto's wife, to take the soul to the heights); one in New England who showed me the beautiful Mohawk Trail; the girl in New Zealand who let me know the charm of her far-off country and the high gallant courage of her blind mother and the desolate days following her death; the man of the same land who copied a great poem and through letters let me feel the sharp contrast between life in London even enriched with good music, and that of a free sun-swept farm in New Zealand, with bees and health; the boy in the Australian Imperial Expeditionary Force, who, writing from Somewhere in France, shared the quick memories of the home bees and the home girl (my last letter to him was returned from France, undelivered; did you get back to them, Australian Soldier?); the woman in Ohio—perhaps the only non-beekeeping friend who has come through Gleanings—who has found a close bond in our common love of the poets and the things of the spirit;the woman in Vermont who writes of sleighs on the snow-bound earth and sap dripping from maple trees in early spring; another New England woman with an "understanding heart" and letters of rare charm; the man in North Carolina whose letters are filled with the spirit of outdoors, frogs and stars and garden-making and a singing through the dark; the Japanese friend whose cards and letters have brought a whiff of cherry bloom from old Japan; the Englishman of Jamaica who knows Selborne and cares for live books; the woman in Florida who—but no, it might sound like boasting to tell of her, as though I were saying, Behold how great a friend I have, rather than, as I mean it, Behold how great a friend she is! What heights and depths and breadths of friendship she has opened to my heart! And oh, all you who love Vergil!—all you who love myths! And the many, many more of you, of various states and other lands, each bringing the priceless gift of the kindly heart and the generous word and the great irresistible charm of friendliness. How my heart has loved and appreciated you all.

There have even been times when this friendly spirit has been symbolized by material gifts, practical or lovely—queen cages and hive-tools and feeders and winter packing-cases, poetry and honey and citrus fruit and shining-leaved holly, journals and papers and books and pictures, dainty hand work and—the grace of it!—bulbs of canna and tuberose and cinnamon vine, hollyhock seeds and the seed of wild thyme. My deep thanks to you all.

I have not been a good correspondent. To many of these friends I am in heavy arrears of letters, weeks, months, even years. Can you believe, dear friends whom I have never met, that the fault is one not of the heart but of the hand, or the unskilful ordering of my days? You cannot know what you have meant to me, one and all, or what you have brought to me that eye hath not seen nor ear heard but which have entered into the heart of me, of graciousness and kindliness and high whole-hearted courtesy. May the years drop their fairest blessings on you. May your bees, dream-driven, undaunted, go humming happily, ardently, inspiringly, from flower heart to flower heart, bringing their precious freightage home to the waxen urns for your garnering, while the singing eagerness of them and their rapturous content become a very part of the veriest deeps of the innermost deathless part of you.

GRACE ALLEN.

FROM NORTH, EAST, WEST AND SOUTH

In Southern California.—The weather in southern California is still very dry. Usually we have some rain before this date (Nov. 4), but nothing more than a light sprinkle has fallen so far. Cool nights prevail and the bees have little to induce them to fly. This is as near the broodless period as we ever get in southern California, and by December or January all prosperous colonies should have a good start in brood. November is a good month to take off all supers containing empty combs, leaving only those containing brood or honey.

The Southern California Fair was held in Riverside Oct. 11-16, and has been pronounced the best ever. The exhibits put on by the beekeepers' clubs would be a credit to any fair. Three prizes were offered for the best display of honey and those things pertaining to the bee business. The first prize of $150 was given to the Riverside County Club; the second, of $100, was given to the San Bernardino County Club; while the third prize of $50 was awarded to Orange County.

The Riverside County Beekeepers' Club met November 4, with a good representation of Riverside and San Bernardino County beekeepers present. After some discussion it was decided to accept the offer of a local firm to make foundation for club members at a price of 11 cents per pound. While this was not quite so low a price as was offered by a firm in Los Angeles, it was decided that the advantages of being able to go directly to the warehouse, deliver the wax and take the foundation along home, were enough to overbalance the small difference in price.

A committee was appointed to formulate plans whereby the small producer can be financed when considered advisable. The small producer is the one who is apt to sell his honey at a low price early in the season because he needs the money, and the market is apt to be weakened thereby.

Since my last letter, accompanied by Mrs. Andrews, I took an auto trip through the great central valley of California and as far north as San Francisco. The return trip was made by way of Santa Cruz, Santa Barbara and the coast valleys. This trip of about eleven hundred miles gives one some idea of the vast territory available for honey production and agriculture. North of the Tehachepi range of mountains very few localities report a satisfactory crop of honey, while most of them report almost a failure.

A side trip of some 40 miles south from the historic old town of Monterey to Big Sur, where our fellow correspondent, M. C. Richter, has located, formed one of the pleasant diversions of the trip. About 35 miles of this road winds back and forth, up hill and down, now near the ocean waves, then some miles back, first among the redwoods, then up among the sages—giving one a most scenic and enjoyable trip. Big Sur is a small resort on the Big Sur River about two miles from the Pacific Ocean. Fine fishing is enjoyed in season, deer abound in the mountains, and if a fellow could not enjoy himself there, we do not know where he could. Stately redwoods abound in the river bottoms, while the sages and other honey plants grow in great profusion on all of the mountain sides, beginning a few hundred feet up from the river and covering the mountains to their tops. In this locality the mountains are not very high (perhaps about 4000 feet), but are "most awfully" steep and rough.

Very little of the great territory lying in the southern part of Monterey County is accessible by wagon or auto road. Some parts are reached by horseback over government trails. While the country produces the finest grade of white honey from the black sage, it is well that we all have the privilege of producing honey where we like, and the writer is well satisfied to operate in southern California. The contract has just been let for an extension of about 13 miles of road connecting with the present road at Big Sur and continuing south along the coast. When the road is completed to a point near San Luis Obispo—a distance of something like 39 miles—this road along the coast will form one of the most scenic drives in the West. Some very fine bee ranges will also become accessible because of the new road.

Carmel Valley, a narrow valley reaching back about six or seven miles from the ocean along the Carmel River, is very fertile, and the settlers are just finding out that they have one of the ideal locations for the growing of pears. They are also finding out that there is great need of pollination and in every way encouraging the placing of apiaries near their orchards. Tracts of pears with several acres of one variety often had little or no fruit, while orchards set to several different kinds, when the trees were well intermixed, gave great crops. Now they often graft a limb of another variety in each tree or set a tree of another variety here and there throughout the orchard. One of these, with plenty of honeybees to work on the blossoms, is considered an assurance of a crop every year.

Continuing on our trip south, the honey crop gradually improved until we reached what is termed southern California, where in most cases satisfactory crops were harvested. A stop was made at Santa Maria, near where there are several hundred acres devoted to the growing of flower seeds. We did not get a chance to talk to any of the beekeepers and wonder if some of the varieties of flowers do not furnish a good flow of nectar. L. L. Andrews.

Corona, Cal.

FROM NORTH, EAST, WEST AND SOUTH

In Texas.—The weather conditions during August, September and October have been adverse to beekeeping over most of the state. With the exception of the black-land cotton section there has been no honey flow since spring. The State Bureau of Markets made the announcement through the Associated Press recently that the honey crop of Texas was only 28 per cent of normal. Only two men, T. W. Burleson of Waxahachie and L. R. Nolan of Kerens report normal yields. These men report averages of 100 pounds each, all from cotton. Many beekeepers have thought their bees in good shape—only to find on examination they were without stores. This condition was brought about by the fact that brood-rearing was heavy in late August and September, and no nectar flow accompanied it. Many beekeepers report that there will be a heavy loss of bees in their yards this winter. In order to take advantage of all natural resources before feeding, many colonies were moved to the limestone hills as a flow from kinnicnic commenced the middle of September. The flow lasted only a few days owing to the lack of moisture, and it is doubtful if the stores collected paid for the moving. At the present time, light and local honey flows are reported from oak galls and broom weed.

The laboratory building of the new apicultural substation, 12 miles southeast of San Antonio, is now completed, and the experimental work will be well under way by the first of the year. This building is of brick and cement, 36 by 42 feet. It contains office, instrument rooms and a large workshop. At present the building is one-storied, but it is built so that a second story can be added later. This substation was made possible through the efforts of the beekeepers and their friends in the state legislature, and it is the aim of these same men to make this the largest and best-equipped apicultural laboratory in the world.

E. B. Ault of Calallen made the announcement, through the state papers, of the organization of the Nueces Valley Apiary Cooperative Association, its object being to buy and sell bees, bee products and equipment.

It is seldom that beekeepers are interested in society notes, but the following are of interest especially in the South. Prof. S. W. Bilsing of A. and M. College, and Miss Alma Merwin of Iowa were married in September. Prof. Bilsing is well known as the foremost instructor in apiculture in colleges. Miss Merwin, who for several years was in the extension service in Texas, did much to interest women in beekeeping and in the use of honey. During the same month occurred the marriage of G. F. Aten and Miss Kate Saathof at San Antonio. Mr. Aten is one of the owners of the Sunny South Apiaries, and Miss Saathof is the well-known treasurer of the Texas Honey Producers' Association.

Every little while some bits of information concerning honey ants come from the southwest states or Mexico, but we now find them at our very door. While digging gravel for the foundation of the apicultural laboratory we cut through a nest of these interesting insects. The storage insects hung to the roof of small cavities in clusters. Their abdomens were distended to a diameter of fully one-quarter of an inch. The dark honey they contained was from brazil. It was a curious thing to see the Mexicans eagerly hunting for these honey-laden insects and eating them—heads, legs and all. After becoming acquainted with this ant we find it to be one of our most common species. H. B. Parks.

San Antonio, Tex.

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In Wisconsin.—The honey crop this year for the state as a whole turned out to be fairly good. With the exception of the southeastern counties and a few localities in the northern part of the state the crop has been good, possibly better than average. Although the state crop-reporting service estimates this year's crop at over 6,000,000 pounds, an increase over any previous year, indications are that it will all be disposed of before the winter is over.

Honey has been moving rapidly the last three weeks. Previous to this date (October 30) several fairly large producers have reported from one-third to one-half of their crop sold. The beekeepers have learned well the lesson of selling locally, and a large part of the crop is being handled in that way. One beekeeper reports having sold 1000 pounds by stopping at farm homes along a stretch of road 10 miles in length. There appears to be a variance in retail prices between localities where the beekeepers are well organized and where they are not. A few beekeepers everywhere sell at very low prices, but the majority in the well-organized communities are receiving from four to five cents per pound more than are those in the communities where no organization exists. This fact alone should be argument enough for strong local organizations.

The State Association is planning to maintain a honey booth at the Wisconsin Products Exposition to be held at Milwaukee, December 14 to 20. The individual beekeepers, local associations and supply companies in the state have been very generous in their support, and enough donations have already been received to insure the success of the project. The State Association meeting will be held in Milwaukee

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December 14 and 15 in conjunction with the Products Exposition. The chief discussion will center around the establishment of a state association label to be used on a standard lithographed pail. Many members have expressed a desire for these containers, and definite action will likely be taken at this meeting.

A local association was recently organized in LaFayette County. This is the 44th local to be organized in the state and the 33d to become affiliated with the State Association. A striking improvement is noted in Rock County where a local organization was formed last spring. Here the beekeepers have been holding monthly meetings and are planning to continue this program throughout the winter. Better beekeeping is being practiced now than formerly, and several beekeepers have expressed their intention of making a large increase next spring.

Bees are going into winter quarters in good condition, with the exception that many colonies are light in stores. Brood-rearing has extended much later this fall than usual, many queens continuing egg-laying through the early part of October. This provides large numbers of young bees, but leaves the brood-chamber destitute of stores. In many cases beekeepers fed sugar syrup for winter stores, early in the month, only to have it used up in brood-rearing. Where this was done, feeding had to be continued at a later date.

Many beekeepers who winter their bees outdoors are making the same old mistake of waiting until they have had several weeks of cold weather before packing instead of doing so before cold weather sets in.

Madison, Wis. H. F. Wilson.

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In Northern Indiana.—Bees in northwestern Indiana along the Calumet and Kankakee river bottoms are in prime condition for wintering. Some apiaries in favorable locations secured approximately 100 pounds of surplus from heartsease and goldenrod and are strong in bees and heavy with stores. On the other hand, colonies on uplands are weak and short of stores. Unless feeding has been done, it is probable that winter losses will be large.

American foul brood has been prevalent in this locality during the season. However, state inspection work has been very thoroughly carried out, and we are hoping for better conditions in the future.

Local grocers are buying largely of western comb honey, shipped from Wyoming, Colorado and other distant points, at a price below cost of local production. Large motor trucks from Chicago and Gary make tri-weekly trips with potatoes, fruit and vegetables, and are now bringing in honey. It might be interesting to know how much our Wyoming brethren get for a case of honey or how much of the consumer's dollar they receive after paying for cases, transportation, commission and peddler's profits. If beemen everywhere would thoroughly advertise honey in home or near-by towns and cities, or if state and national organizations would institute a systematic advertising campaign in every city and see that every grocer is constantly supplied, the demand would, without doubt, take care of the surplus; but if only occasionally a beekeeper or association stimulates demand by local advertising, outside products immediately flow in and nullify the effort. It costs money to advertise, and if results are to be obtained through organized effort we must get away from the idea of a fifty-cent or dollar membership fee. Will commercial beemen ever awaken to the necessity and importance of business organization?

Valparaiso, Ind. E. S. Miller.

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In Western New York.—The season of 1922 for New York State has been peculiar; like that of 1921 the crop was very spotted. Contrary to early prospects, the better crops were realized in those sections where no crop was secured in 1921.

With very few exceptions no fall honey has been harvested, and bees are very light in stores for winter. Many beekeepers have fed as much or nearly so for winter stores as the surplus of early honey amounted to.

Goldenrod, asters and other fall wild flowers seemed plentiful and bloomed profusely. Bees worked them freely, but the hives did not gain in weight. Brood-rearing ceased nearly a month earlier than usual. Why these conditions prevailed I do not know, as the soil had plenty of moisture and the weather was moderately warm.

The honey market, although a little slower than a year ago, due mostly to the plentifulness of all kinds of fruits, shows a great deal more steadiness than it did last season, with not nearly so much price-cutting as then.

The production methods in beekeeping have made great progress in the last score of years. The methods of distribution and marketing of the product have received less attention, but surely they are more important. If beekeeping is to remain a good business, honey must be marketed at a fair and uniform price, that will yield a fair return on investment and a wage income for the operator that will compare favorably with the income of equally skilled labor in the industries.

Beekeeping is one of the most interesting pursuits, and most beekeepers love their work to such an extent that they would continue to keep bees and live on a very small income rather than to engage in some other less interesting vocation. But each generation is becoming more and more practical, and if we wish our children to follow us in beekeeping we must use all our efforts to establish beekeeping on a level that will compare favorably with other industries. This, in my humble judgment, can only be done by associated endeavors—not necessarily in the big central co-operative associations with their necessary large overhead and in some cases burdensome expenses, but rather in smaller corporations associated together in form similar to other successful industries, each maintaining its own sales organizations but selling at associated prices and each trying to make quality their greatest asset.

Our organizations, though loosely organized, have done much in stabilizing the honey markets, and the future is unlimited so far as we know. We can each do our mite, and, by collecting together, the mites are made mighty. The slogan of today is ''Good Business.'' Let us all help to make honey production a good business.

Ransomville, N. Y. Howard M. Myers.

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In Michigan.— This seems to be a season of price-cutting in the honey market. One large department store in Lansing has sold quantities of white honey in five-pound pails as low as 69c per pail. Repeated protests are received from members of the State Association that their neighbors are selling white honey at 75c per five-pound pail. This is folly.

On the other hand, a beekeeper is selling his crop of honey, house-to-house in Lansing at $1.25 for a five-pound pail, which shows that the public is willing to pay the price provided quality is assured. Too many beekeepers are allowing their neighbors to set the price which they should receive for honey. Too many become overanxious to move their honey crop before Christmas.

One association member, who was moving honey satisfactorily at 90c for five pounds, cut his price to 75c to meet competition at the city market on Saturday. Much to his surprise his honey moved no faster at 75c than at 90c. How long will it take beekeepers to become familiar with the psychology of selling? We hear much, these days, of the comparison of honey prices with prices of farm produce in general. Although we must expect that the lowering of prices for farm produce suggests a reduction in the price for honey, the fact remains that many beekeepers have never yet received a fair price for their honey. The beekeeper should not sell his honey in retail packages at wholesale prices.

To assist beekeepers in determining approximately what they should receive for their honey a scale of prices was sent to each member of the Association. It has been suggested that reports from a price-fixing committee should be mailed to beekeepers at the beginning of each month to keep them in close touch with conditions of the local honey market all the time.

However, there are two classes of beekeepers who cut prices—one because they do not know the actual market price and the other because they think they must sell cheaper than their neighbors to get rid of their honey. The former may be assisted through receiving information, the latter can only be helped by being supplied with a new point of view.

The weather this fall has been especially advantageous for the preparation of bees for winter. Judging from the volume of inquiries received for directions for packing, Michigan beekeepers are preparing their bees for a cold winter. As before, telegraphic reports will be sent to beekeepers, informing them of the proper time to place their bees in the cellar the latter part of the month. A year ago a number of beekeepers who wintered in cellars availed themselves of this opportunity.

It has been brought to our notice that ex-service men may secure licenses from county clerks for one dollar to sell house-to-house in cities. This is due to an act of Congress and holds good in all states according to our information. Since so many ex-service men are studying beekeeping throughout the country this service should be of real value to those who want to sell from house to house. In this connection some members of the Association have encountered difficulties in selling their honey in cities outside their own county. To settle the matter an opinion was secured from the Attorney General, which stated that so long as there was no question as to the honey being taken from diseased colonies, the beekeeper could sell his own honey any place he could obtain a market.

Although the fall honey flow was below average, few beekeepers in this locality needed to feed for stores. There is a growing tendency among beekeepers to use the Demuth feeder or even a deep hive-body for winter stores. We are urging plenty of well-ripened honey for stores in place of feeding sugar syrup in excess. Many are using the tarred-paper packing-case this winter.

A schedule is now being prepared whereby two-day beekeepers' schools will be held in approximately 30 counties during the coming winter. Each year the attendance at these county beekeepers' schools increases. Many beekeepers who can not spend time to attend conventions and state meetings will drive up to the county seat to the two days' program. Through the cooperation of the local papers these schools

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have a certain advertising value for local beekeepers.

However, the real benefit derived from these county conventions is the development of that "get-together" spirit which leads to the conception of true co-operation—the thing which is so badly needed in the beekeeping profession today.

East Lansing, Mich. Russel H. Kelty.

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In Georgia.—The annual meeting of the Georgia Beekeepers' Association at Hopkins, on the edge of the great Okefinokee Swamp, on August 25 and 26 last, was a memorable one. It included a trip on a log train to "Billy's Island," 20 miles from Hopkins in the interior of the swamp. The railroad is built on trestles most of the way and is the only roadway into the interior of the swamp. Along the way we saw an abundance of good honey plants of all kinds peculiar to that region. The pepperbush (*Clethra anifolia*) was just going out of bloom and is about the last of a list of plants which should keep up a good honey flow from the first day of April to the first of September or later. I am afraid, though, that the swamp will not be occupied by scientific beekeepers for some time to come, as none will be likely to relish the prospect of having wild animals only for neighbors and of having to sit up nights disputing property rights with the numerous bears that are said to live there.

J. J. Wilder has a good many apiaries around the sides of the swamp. We visited one at Hopkins that was composed of black bees which had been transferred from trees and gums in that locality. One of our party, being an adept at such tricks and having a veil with him, opened a hive without smoke and took out a frame filled with delicious pepperbush honey. By the time we were through sampling it, there was not much left. The country around Hopkins is said to be very healthful, there being no malaria. When we returned from the swamp we at once took our cars back to Waycross where we held our final meeting at Mr. Wilder's plant.

We are informed that, through the vigorous efforts of our State Bee Inspector and the co-operation of those whose bees were infected with foul brood, this dread disease has been practically wiped out of our state. Little fear need be entertained of its spreading again, as the methods pursued for its eradication were heroic and effectual (fire treatment).

We have had a continuous, though slow, yield of honey in this section from June until now, due largely to the spread of Mexican clover, which seems to stand a drouth well and springs up fresh and green after a good rain. It will be in full bloom until frost kills it. There is much land here yet to be covered with it, but as it makes good hay it will continue to spread rapidly.

Bees here, and probably all over the Coastal Plain, are in generally good condition for winter, and little, if any, feeding wlil be necessary except where artificial increase has been made late. The honey market in this region is practically closed as soon as new sugar cane syrup appears on the market, but the people begin to call for honey again in the spring some time before new honey is ready for market, so that those that have honey for sale can regulate themselves accordingly.

This year, as usual, our supply of honey gave out while the market was still good, but there seemed to be an unusual amount of honey on the market with prices about 10 to 12½ cents for light extracted in tins and 15 to 20 cents for comb honey. Chunk honey does not sell well in our market.

Norman Park, Ga. T. W. Livingston.

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In Florida.—The drouth from which beekeeping in South Florida has suffered for the past two years has been broken. Heavy rainfalls during September and October have brought this section back to normal. If conditions remain as favorable as they are now, next season should show one of the record crops of honey.

The past two months have been a heavy drain on stores, as the bees have had little opportunity to work in the field. The fall crop will be light unless the bloom holds out later than usual. Beekeepers in this section must watch the stores of honey in the hives carefully and not allow their bees to go into the period of no nectar with an inadequate supply of honey.

Some beekeepers are complaining that the bees are rearing brood too heavily just now. All bees in this section are carrying on extra heavy brood-rearing for this season, and what honey is being brought in is going into bees instead of into the supers. They need not worry, however, as the honey that goes into young bees now will be returned with heavy interest by the bumper colonies next season. Beekeepers must watch now or many colonies that were too closely harvested in the summer will run short of stores before the nectar flow opens in the spring. All colonies in this section of Florida are now in better condition than they have been at any time during the past three years.

The past season the black mangrove was again a failure among the Keys, but coral sumac or poisonwood, false dogwood, mastic, white mangrove and buttonwood furnished a fair crop of honey. These plants are always a dependable source of honey on the Keys and seldom fail to produce their share of the surplus. All these plants produce an almost white honey unless it is allowed to ferment on the hives before it is removed.

A mistake that has crept into the literature of the honey flora of the Florida Keys, and is often quoted, is the credit given to manchineel as a source of surplus. Manchineel (*Hippomane Mancinella*) is often mentioned as a valuable honey plant of the Keys. A search for this tree, during the past three years, among the Keys from Miami almost to Key West, has failed to disclose a single specimen. It is credited with growing here but must be very rare, as it is unknown to the natives living on the Keys.

Coral-sumac or poisonwood (*Metopium taxiferum*) is a common tree and a bountiful honey-producer. While the sap is poisonous to some people, it is not nearly as much so as the poison ivy. No doubt due to the common name, this plant has been confused with the manchineel, which is said to be the most poisonous plant that grows, but which is too rare to be classed among the honey plants of the Florida Keys.

Miami, Fla. C. E. Bartholomew.

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In Louisiana.—The bees have about "knocked off" doing work in this locality for the honey season of 1922. However, goldenrod, thoroughwort, white heartsease and asters are still at work producing nectar in the lower part of the state and will be until December, as there has been no frost as yet. The honey season in Louisiana spreads over 10 or 11 months, beginning early in January with the soft maple and ending with the abovementioned flowers. As a whole this has been a good honey year. The producers who assisted their bees when they needed assistance have made large crops of honey, and they wear the smile of contentment which rightfully belongs to them. Quite a number of beekeepers measure this season's work by counting the crop in hundreds of barrels.

The late fall honey flow has been good, and the fine weather has enabled the bees to store all the food they may need to carry them through to spring. As a whole, the bees are in better condition to winter than they have been in for years, and this, of course, insures a fine crop in the spring from willow, tupelo gum and white clover, provided weather conditions are good.

The pound-package business has been greater this past year than ever before, and some record-producing queens have been shipped from Louisiana to our northern brother beekeepers. The coming season will be a fine one in this respect, and beekeeping in Louisiana will, no doubt, be very profitable to the man or woman who tries to make it so. E. C. Davis.

Baton Rouge, La.

In North Carolina.—Beekeepers generally are getting their apiaries settled for the winter in a fairly satisfactory condition, but many are finding it necessary to feed more than had been anticipated. This is due particularly to quite a disappointingly light flow of nectar in the fall flora. This has been especially true in the eastern section of the state. However, taken all in all, conditions just now in this state are fairly satisfactory both as to the present status of the bees and as to the outlook for a good honey season next year.

In the recent State Fair in Raleigh (October 16-23) there was, in the Bees and Honey division, an exhibit of 278 pounds of honey, all of No. 1 type, both extracted and comb honey in glass, representing the production of a single colony this season. This was in the general apiary products display of the Lower Cape Fear Apiaries, W. J. Martin, Wilmington. It took the blue ribbon and special first cash premium award for the biggest single colony yield this season in the state. However, in all the nine yards constituting this chain of apiaries, there were scarcely a dozen colonies that anywhere near approached this yield.

This display of high single-colony output at the State Fair is having an especially important bearing on the campaign that has been on for several years to induce beekeepers to transfer their bees from the old gum and box hives to the improved hives and give close and intelligent attention to them. The fact was stressed in this exhibit that three years ago this "big yield" hive, along with 150 others, was transferred from the gum hive into the Standard "Root Model" ten-frame hive and that this splendid yield is the direct result of the improved quarters and better attention the bees are receiving. Three years ago C. L. Sams, Government Bee Specialist, directed the work of transferring these bees from the gums. At the Fair he procured a splendid photograph of the display of the honey from the single colony. This picture, together with pictures of the gum hive from which the bees were transferred to the Standard hive, and this improved hive, as it stood with its big stack of supers before the honey was taken off, will go to Dr. Phillips, of the Bureau of Entomology, Washington. D. C. They are to be used in making lantern slides to impress upon beekeepers who still have bees in gums and boxes the advantage that comes from transferring them into the standard hives and giving them intelligent attention.

The students in the Bee Culture division of the State College, directed by J. E. Eckert, professor in charge, installed for the State Beekeepers' Association an excellent exhibit of honey and general apiary products that added much to the success of this feature of the State Fair, which is coming more and more each year to prove especially attractive to the many thousands of State Fair visitors. W. J. Martin.

Wilmington, N. C.

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In Porto Rico. The paragraph by J. E. Crane, October Gleanings, page 649, in reference to gentle bees, interests me. This is nothing new for the elder beekeepers to discover. Dr. Miller joined this branch of beekeepers some years before he left us for good. Alley and Pratt (better known by his *nom de plume* of "Swarthmore") advocated this class of bees 15 to 20 years ago. Not only did they advocate gentle bees but they bred them, and their joint strain is still in demand.

The season in the hill districts of Porto ico has been a very disappointing one. The first part of the year we had far too little rain, and the latter part, too much. It has been raining almost daily over the central, northern and eastern sections of the island, with quite a bit of rain at the western side. During the last week of September we had over five inches in the Aibonito section. On October 14 we had over three inches in less than three hours.

The honey is now being extracted in the hill districts. In many apiaries all kinds of robbing are taking place on account of the method of extracting. It is not unusual for the peons who do the work to take off two or three thousand pounds, put it in the extracting-house, and when the combs are extracted put them right on the hives. This naturally causes robbing. I have gone into apiaries while extracting was being done and seen from a pint to a quart or two of bees in front of every hive, the apiary in an uproar and much robbing going on. In the apiaries operated by me we pursue a different method. Daily six to eight hundred pounds are removed early in the morning before the bees are flying to any extent. We do not remove the entire super—only take out the combs to be extracted, shaking and brushing off the bees and putting the combs into covered carrying boxes. This honey is extracted during the day, and at dusk the combs are returned empty where they came from. By the next morning all combs are cleaned up and the bees have forgotten about cleaning them up. Hence we have no robbing.

There is quite a bit of conjecture here as to what effect the placing a tariff of 36c a gallon on all honey imported into the United States will have on the price of the Porto Rican product. Our honey has been selling for months for less than crude sugar. It is supposed by the beekeepers here that this new tariff will eliminate most of the South American, Central American, Mexican and West Indian honeys. If this is the case there will likely be quite a shortage of the grades of honey used by the bakers, confectioners and manufacturers of remedies containing honey. This will presumably run the price of the cheaper grades to the point where the invert sugar preparations, or some other substitute will meet it and hold it stationary.

Aibonito, Porto Rico. Penn G. Snyder.

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In Ontario.—Bee work for the season is at this date (November 6) practically over here in Ontario. While we often think that the South has many advantages over the North so far as beekeeping is concerned, yet the advantages are not all one way by any means. Our super combs are now free from moth attacks till next June at the earliest, and practically nothing is needed in the way of caring for the bees till next May. Of course this is assuming that all necessary work has been done this fall; and even if this work has been neglected, nothing that we can do later on will help matters much, unless it be in the way of feeding early in the spring to avoid having colonies starve. But that is a condition to be avoided by all means, if possible, as a few experiences in that line have fully proved to us in the past.

Generally speaking, now that conditions are fully known, Ontario has been blessed with a fine crop of honey for the season just passed. Quality, as a rule, has been well up to the usual standard of excellence that we look for in Ontario honey. The market for honey is still dull, but I look for an improvement after the holidays when fruit is coming on the market in less quantities than at present.

Personally, we have sold out all our crop, and our two grown-up boys are away in the northern woods for a two weeks' outing. And I might as well confess that this is being written just a few hours prior to the departure of the *paterfamilias* on a similar expedition. As I have not been off on a holiday of this nature for about 20 years, this will be my excuse for once more lapsing into a habit acquired in youth, but one in which I have not gratified those tastes for so a long a time.

Soon after this is in print, the annual convention of the Ontario Beekeepers' Association will be a thing of the past. While I have not yet seen a program, there is all likelihood of a bumper attendance as a good season generally means a good turn-out at the annual meeting. As a matter of fact, whether crop is good or poor, we always have a fine attendance, and this year is not likely to be an exception to the rule.

Markham, Ont. J. L. Byer.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Nectar Secretion at High Altitudes. Here is a picture of the San Francisco peaks near where my bees are located and close to Flagstaff, Arizona. The highest point is a little over 12,000 feet above sea level or nearly 2½ miles high. The snow stays on the tops the year round, and in places it is 30 feet deep. The bees make much more honey around the mountains than they do on the plains, for at this altitude the atmosphere is so cool that when the wind blows the clouds against the mountains the cool air causes the water to form in drops, thus bringing rain. I have noticed that it rains much more around the mountains than on the plains. These showers and the lower temperature cause the nectar to rise in the bloom in great quantity. The closer to those foothills, the more nectar there is in the bloom. I know this by finding bee-trees. Some I found at an elevation of over 10,000 feet were the richest of all. One had 22 gallons of comb honey which weighed 220 pounds.

Flagstaff, Ariz. S. M. Campbell.

Winter scene in Arizona. San Francisco peaks in the distance. The richest bee-trees were found at higher altitudes on the mountain slopes.

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Bees Distinguish Colors. We received two nuclei of bees from Missouri, and had them placed inside the house to have them sent out into the country during the cool of the night. One of the boxes started to leak a few bees which were soon flitting around in the house, nosing all about. I noticed that one bee went to a bookstand where I have some books standing and lying, and it struck me that the bee went distinctly to each single red and dark-pink book, but did not touch any of the others, although there are bright-blue, green and brown books. I also noticed that bees went to the bookcase flying up and down the glass. Here, of course, I could not see any picking out of any particular color; but it remained considerably longer at the bookcase than at any other piece of furniture in the room. If the bee, to all appearances, is able to distinguish the colors of books, then it is surely also able to distinguish the colors of flowers, which, I understand, has been disputed. I had plenty of time to follow the doings of the bee, I am sorry to say, having been down for five weeks from a broken leg.

St. Thomas, Virgin Islands. Axel Holst.

Large Yields in South Dakota. There is a Methodist preacher up in South Dakota who takes his recreation in beekeeping and has a lot of fun out of it. Not long ago he was driving home from seeing a sick man and ran into a swarm of bees. The bees covered the car and were all over the preacher. He stopped his car as soon as he could, and watched the bees. He saw that it was a very large swarm and decided to follow them. They soon settled on a tree. He went to the home of the owner of the land and told his wife about the bees. She threw up her hands and shouted at him: ''Take them away, I don't want them at all!'' The preacher told her to see that no one got the swarm, while he went to town for a hive.

That swarm was too big for the hive. He took a beeman out with him the second trip, and both of them decided to put on another hive-body. That proved too small, so a super was put on, to make room for all the bees to get inside of the hive.

Of course everybody knows that when a man starts to raising chickens or strawberries, or goes fishing or hunting, or raises bees, he is immediately classed among the world's greatest liars. But the writer will vouch for the truthfulness of the amount of hive room required to put the bees of that big swarm inside. It may be that there were two or three swarms united to make the big swarm, but the preacher successfully got them inside. Then the fun of putting supers on began. That swarm made 320 filled sections of comb honey, 71 pounds of extracted honey, and is going into winter quarters with plenty of stores for the winter. Chad Dixie.

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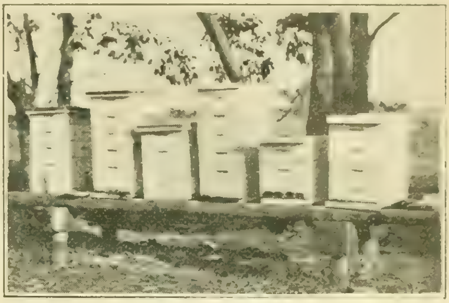
How Bees Use Their Wings. The following interesting information appears in an article, "Marvelous Secrets Revealed by the Microscope," by Richard Kent in the October issue of The American Magazine, page 46, third column, next to last paragraph:

"How many wings has a bee? Four. But how many wings has a bee when it flies? Under the microscope we see that the bee has a clever device for uniting its front and hind wings during flight. On the front edge of the hind wings, the microscope shows us a row of tiny hooks; and when a bee starts to fly it hooks these wings to a ridge on the hind edge of the fore wings, so that, for flying purposes, the bee really seems to have but two wings."

Chicago, Ill. Geo. J. Griessenauer.

Skyscrapers in an Australian Desert. We are having another droughty season in Australia, yet honey and wax are very low on the market on account of the importation of a cheap article or substitutes from abroad. The beekeepers realize the seriousness of the situation and are trying to amalgamate into a co-operative society or at least are trying to work together with a powerful co-operative association here, the Coastal Farmers' Co-operative Company. Being only a side liner and residing in the desert part of New South Wales, where beekeeping can be carried on only as a hobby, I take great pride in my skyscraper which is shown in the illustration. Think of skyscrapers in a desert, where herbage is rarely seen, where there are no rivers, no springs nor wells, but only rain water collected by artificial means!



Not so high as some North Dakota skyscrapers, but these are in a desert. A spider is induced to make its home in each of the tins on top of the posts supporting the hives as protection against ants.

A. Volkofsky.

Olins, Wilcannia Rd., Cobar, N. S. W.

A small artificial lake for collecting rain water in a desert region of Australia which is the source of Mr. Volkofsky's water supply.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Folly of Cutting Prices. We are having the price-cutter with us again. One large beekeeper is selling honey at $1.50 per 10-pound pail at retail, where it had been $2.00, and another in a small town not far distant is reported retailing comb honey at 20c per section. I had been getting 40c per section but could not sell any more as they told me I was too high. I cannot sell extracted honey now either, since they think I ought to sell it at $1.50 per 10-pound pail, but I cannot see it that way yet. I still am able to sell comb honey through one of our stores at 35c per section, but it moves rather slowly.

I had only a little honey left but had planned to buy and resell after disposing of my crop, yet if I must give 12c to 15c per pound, pay freight, buy containers and re-pack, I don't see where I can get out even, to say nothing of pay for my trouble.

The reason I wanted to do this was to have a steady supply the year round, so as to have the public accustomed to getting it any time and thus create a better demand, since anything constantly on the market will eventually be used in larger quantities, and so when I have more honey to sell in the future I will have a market worked up for it. But what's the use? Nic. Klein.

Hudson, Iowa.

* * *

An Experiment with American Foul Brood. I have been experimenting with brood diseases, and have some interesting results. I first took a colony having American foul brood in its worst stage and set it on top of a healthy colony above a screen. The colony below took the disease (about 60 cells) in the first 50 days. Thinking that the germs fell down through the screen, I tried it with the diseased colony below with a screen over it, then an empty hive-body, then another screen, then the healthy colony above. I found 50 to 60 cells of American foul brood in 40 to 50 days. Charles S. Kinzie.

Arlington, Calif.

* * *

How to See Inside of the Winter Cluster. I have a glass top on almost every hive and will soon have one on every hive. The hive cover is 16¼ x 20 inches and the glass is 14 x 16 inches. Over the glass I always have a nice cushion or two, sometimes three, for winter. The cushions are about the size of an ordinary feather pillow and about three inches thick. I fill these with feathers or cat-tails that grow in wet places. During cold weather the bees under the glass look as if the pane of glass were in the middle of the cluster and the top half of the cluster removed. There is a ring of bees from one to two inches thick all around the cluster tight against the glass (the glass being an inch above the top-bars of the frames), and the inside is from ½ inch to 1 inch below the glass, the bees gently moving over and under each other. The outside bees move but little, though none are asleep.

Talk about interest in bees! It is great fun to watch the inside of a cluster.

Hammondton, N. J. C. E. Fowler.

* * *

Honey in Automobile Radiators. I made a mixture of different kinds of honey and placed it in the refrigerator of an ice cream company and below are the results:

Clover honey, one-half honey, one-half water, froze solid at about 10 degrees above zero. Clover honey, two-thirds honey, one-third water, froze quite solid at 10 degrees below zero. Fruit bloom and raspberry, two-thirds honey, one-third water, froze at 10 below zero. Clover honey cappings, two-thirds honey, one-third water, that had been through an Armstrong capping-melter, froze at about zero. An extra-good quality of buckwheat honey, two-thirds honey, one-third water, did not freeze at 12 below zero. In no case were the bottles broken.

I am now using honey from the capping-melter in the above proportions in my Ford truck and it keeps the engine perfectly cool.

Perhaps Gleanings could asist in getting reports from others and help make a market for a great quantity of honey for automobile radiators. Joseph E. Palmer.

Markville, Ont.

* * *

Wintering in Two Stories. Heretofore it has been my custom to reduce each colony to one story in the fall; but last year I decided to winter them in two stories, leaving more than enough honey for their needs. The expected result was exceptionally strong colonies this spring; and, as we had a heavy locust flow, practically three-fourths of the crop will consist of this honey. However, after the locust bloom was over, the unwelcome honey-dew made its appearance.

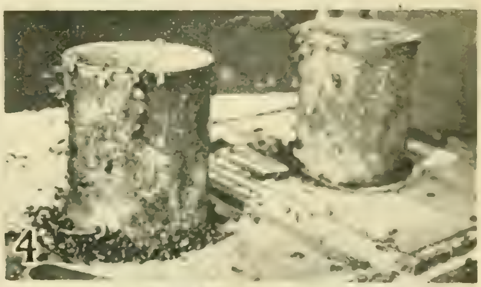
Cincinnati, Ohio. Albin Platz.

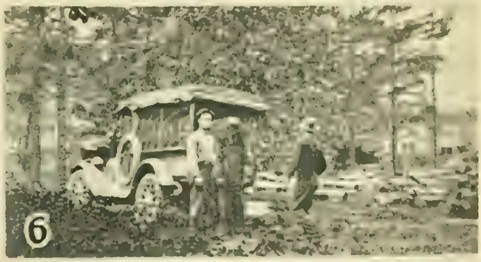
* * *

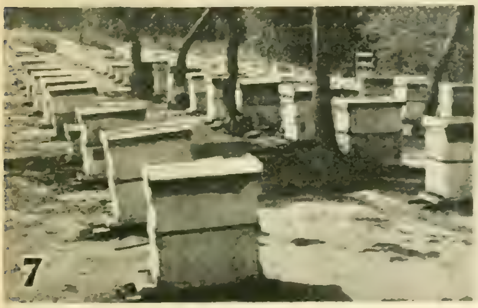
To Prevent Bees Crawling Up Sleeve. Every beekeeper knows how annoying it is to have a bee crawl up his sleeve and sting his arm, especially in the fall when the bees are cross. To prevent it take a piece of cotton twine 10 inches long, tie a loop in one end, pass the loop over the button at the wrist, fold the wristband around snugly, wind the string around it once and around the bottom twice. It will stay till you take it off, and no bee can crawl up your wrist.

Plainfield, N. J. B. C. Whitney.

HEADS OF GRAIN FROM DIFFERENT FIELDS







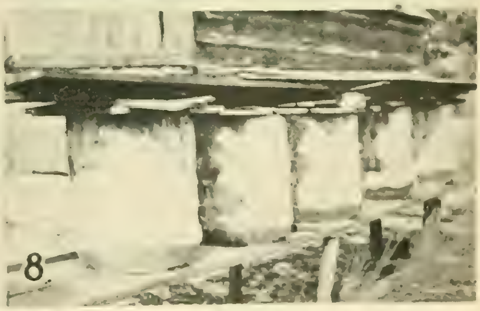


Fig. 1.—Filling ten-pound pails with hot syrup for outyard feeding. See Editorials.

Fig. 2.—Loading pails of syrup on a light Ford truck which is driven to the outyards and down between the rows of hives, and then unloaded from hive to hive.

Fig. 3.—Ten-pound feeder pails turned upside down over the hole in the super-cover board before the colonies are finally packed for winter.

Fig. 4.—In order to make the ten-pound pails work satisfactorily as feeders it is important to have only about thirty holes in the cover, each a scant 1/16 of an inch in diameter. If the holes are too large, or if there are too many of them, the syrup will run out so freely as to cause a smear on the super-covers, resulting in robbing as shown in the pail at the left.

Fig. 5.—All the weak colonies at Medina are brought home from the outyard, and placed, for the purpose of feeding and uniting, in pairs. After uniting they are put into the cellar.

Fig. 6.—Small truck ready to take the bees into the A. I. Root Company's 500-colony cellar.

Fig. 7.—It is getting to be more and more the custom in California to winter in two-story hives. The upper story is usually filled with good honey stores, when the bees are ready for winter.

Fig. 8.—A small log-gum apiary in North Carolina. Old beekeepeers using these gums say that hollow logs with thick walls like those here shown are much better for wintering than the ordinary box hive made of thin lumber, and no doubt they are right.

GLEANED BY ASKING

Geo. S. Demuth

QUESTION.—What is the food value of honey compared with that of beef or eggs, or some of the other staple foods?

H. O. Leopold.
Pennsylvania.

Answer.—In comparing the food value of honey with beef and eggs it is important to remember that beef and eggs contain a high percentage of protein, which can be utilized in the body in repairing worn-out tissues, while honey does not contain protein but is an energy-producing food. Honey should therefore be classed with the fuel foods which supply the body with energy and not among those whose function it is to build and repair the body—that is the "tissue-formers" as they are sometimes called. The energy value of honey is about 1485 calories per pound. The energy value for eggs is about 635 calories per pound, and that of beef ranges from about 545 calories per pound up to about 1100 calories per pound, according to the cut.

Head and Mouth Parts of Queen Bee.

Question.—How do the head and mouth parts of the queen bee differ from those of the worker?

Illinois. F. Robert.

Answer.—The head of the queen bee is smaller than that of the worker. It is more nearly round in shape instead of somewhat triangular in shape as that of the worker, the head of the queen being wider in proportion to its length. The mandibles of the queen are notched instead of being smooth like those of the worker. The parts of the proboscis are much shorter in the queen than in the worker. In general the mouth parts of the queen bee suggest weakness when compared with those of the worker. The reason for this is not difficult to understand when it is remembered that the queen bee, while capable of feeding herself to a certain extent, is usually fed by the workers.

Honey from Colony Having European Foul Brood.

Question.—Our bees had European foul brood last summer, and we requeened with pure Italian queens. By fall all of the disease had disappeared. We have some extracted honey left over which was taken from these colonies. Can this be fed back to the bees next spring without danger of again produce the disease?

New Hampshire. Albert & Wesley Campbell.

Answer.—The organism which produces European foul brood (*Bacillus pluton*) if present in honey will be destroyed within a few months while in storage. Apparently these organisms are not able to live long when suspended in honey. Several years ago Dr. G. F. White, Bureau of Entomology, Washington, D. C., introduced these organisms into honey which was allowed to stand at room temperatures but shielded from the light. Samples of this infected honey were taken from time to time and fed to colonies of bees. All colonies that were fed honey containing this organism developed European foul brood during the first few months, but after seven months no disease was produced. The results of this experiment are recorded in the United States Department of Agriculture, Bulletin No. 810. In your case the honey which you extracted from the colonies having European fould brood will be in storage more than seven months before you will have occasion to feed it, and should therefore be safe. In case of doubt you can render this honey safe for feeding by diluting it with water, then heating it to kill the organisms. If the diluted honey is heated to the boiling point or nearly to the boiling point for 10 or 15 minutes the organisms should be killed. It must be remembered that these statements are for European foul brood and not for American foul brood. In the case of American foul brood the organism (*Bacillus larvae*) is spore-forming and therefore much more resistant.

Size of Tunnel for Winter Packing-Case.

Question.—In packing my bees I use a small tunnel ¼ inch high and 2 inches wide for the opening. I find one colony has an unusual number of dead bees in this tunnel, and I am inclined to believe it is not large enough. If the tunnel becomes clogged up with dead bees, will the remaining bees in the hive smother?

Wyoming. C. N. Andrew.

Answer.—It is safer to use a large tunnel through the packing and then reduce the size of the entrance by closing the opening in the outer case. Many who use winter packing-cases build a tunnel at least an inch deep and six or eight inches wide. By using a deep tunnel and closing down the opening in the outer case, a vertical opening about ⅜ of an inch wide and from 1 to 1½ inches high can be made. With such an entrance the dead bees would have to be piled quite deep before the opening could be closed entirely. It can be arranged so that the entrance can be easily enlarged in the spring when the bees need a larger entrance and before time to remove the winter packing-case. The danger of the entrance being clogged by dead bees depends upon the number of old bees in the hive at the beginning of winter and the character of the winter. Colonies which go into winter with a large proportion of old bees often show a rapid death rate during the early part of the winter. If the winter is mild and the bees are able to fly at frequent intervals, they may be able to carry out the dead as fast as they accumulate, but if the weather prevents the bees from carrying away their dead they may drag them into this passageway in large numbers. If the entrance should become entirely closed by dead bees, the colony finding it is imprisoned becomes greatly excited and is liable to be smothered. As long as the bees do not discover that they are in prison they will have a sufficient supply of oxygen, but when they are excited over being imprisoned they become very active and consume oxygen rapidly.

Management Suited for Different Localities.

Question.—Can you explain to me in what way the management of the bees should differ in California from that in the East?

California. F. N. Chamberlain.

Answer.—In working out the system of management suited to any given locality the important thing to keep in mind is the time of the main honey flow in reference to the natural period of extensive brood-rearing in the spring. When the bees build up to great strength during the heavy brood-rearing period of spring and the main honey flow comes at about the time the bees have reached their greatest strength, the management of the colonies will be similar to that of the white clover region. When the main honey flow does not come until some time after the bees have reached their greatest strength in the spring, we have another type of location. This is the type found in much of the irrigated regions of the West where alfalfa is the chief honey plant. Where there are several honey flows during the season that are of equal importance, each yielding a surplus, we have still another type of location calling for different management. It will be thus seen that the securing of a crop of orange blossom honey in southern California calls for management quite similar to that of securing a crop from white clover or alsike clover in the northeastern part of the United States, since in both cases the main honey flow comes on at about the time the colonies first reach their greatest strength in the spring. In fact, the problem in each case is that of having the colonies in such condition that they are able to build up in time for the honey flow. The management after the honey flow may be entirely different in southern California from that of the clover region, because many beekeepers in southern California after securing a crop of honey from orange blossoms move their bees to the sage regions for the crop of sage honey. Those who are located where their crop comes almost entirely from sage will find their problem somewhat different because the honey flow comes on later.

Noise Made by Bees in Cellar.

Question.—Should the bees become absolutely quiet in the cellar? If not, what degree of quietness is considered normal? W. L. Crites.

North Dakota.

Answer.—Bees are never absolutely quiet in the cellar. When wintering well there will be a low contented hum when many colonies are together in the bee-cellar. Within a few days after the bees are put into the cellar they should quiet down so that no bees will be seen crawling about the entrances, and there should be none flying out into the cellar. The bees should be quietly clustered, and those on the outside of the cluster should remain almost motionless, not being easily disturbed even when a lighted candle is brought near them. Later in the winter, a larger number of bees will fly from their hives into the darkness of the cellar. These are old bees leaving the hive, and if the cluster is quiet this need not cause alarm. Quiet in the cellar during winter depends, to a large extent, upon the bees having a good cleansing flight just before being placed into the cellar. It also depends very largely upon the character of the winter stores. If the winter stores are poor so that there will be a large accumulation of undigestible material in the bees' intestines, they will become increasingly restless as the winter progresses.

Purpose of Metal Rabbets.

Question.—What are the tin rabbets for that belong to the brood-chamber? It seems that I can get along without them. Harold Hanson.

Minnesota.

Answer.—The tin rabbets are used to prevent the bees from propolizing the projecting ends of the top-bars to the hive, thus making it easier to handle the frames. By holding these projecting ends a bee-space above the shoulder in the end of the hive, the bees can pass under them and so do not propolize them much unless the rabbet becomes filled with propolis. Some do not use the tin rabbets, but in this case the rabbet in the end of the hive must not be cut so deep. If the rabbets are cut deep enough to allow for the tin, the frames will drop down too deep in the brood-chamber, leaving too much space above them.

Leaving Cellar Door Open During Winter.

Question.—My bees are apparently doing well in the cellar with the cellar door open. Should I leave it open during the winter?

Montana. James Spray.

Answer.—There is no more reason for the light's disturbing the bees in the cellar at this time than at the same temperature outside, but it will be difficult to maintain the proper cellar temperature if the door is not closed during cold weather. Bees will remain quiet early in the winter under conditions which, later in the winter, would cause great excitement, resulting in many bees leaving their hives. For this reason it is better to keep the cellar dark, especially during the latter part of the winter.

Saving Unsealed Honey for Spring Feeding.

Question.—I have some brood-combs filled with honey which is not capped over. Should I use these to feed the bees in the spring?

Idaho. N. C. Larson.

Answer.—If these combs can be kept until spring without granulating they will be excellent for feeding the bees at that time. They should be kept in a heated room during winter to prevent the honey from absorbing moisture and to reduce granulation. On account of the tendency to granulate in the combs of much of the late-gathered honey of your locality, it may be better to extract this honey and then feed it back to the bees in the spring.

BEES, MEN AND THINGS

(You may find it here)

ONCE I read in a book that a Roman emperor asked one of his generals, who was 75 years old, how it came that he looked like a man of 30 years. ‘Oh,’ said the general, ‘that is quite simple; for the outside oil and inside honey.’ ’’—G. J. Riesener, Baltimore County, Md.

‘‘Will welcome the day when famous Hubam clover is planted everywhere. We believe it will do unusually well here,’’—Mrs. H. C. Eagerton, Berkeley County, S. C.

‘‘The greatest trouble with our honey market is that it is being flooded with honey offered in retail at wholesale prices. It is mostly small beekeepers who do this. It hurts mighty badly.’’—P. C. Ward, Todd County, Ky.

‘‘From Sept. 10 to Oct. 5 we had a good honey flow from heartsease. The colonies are now strong in young bees and heavy with the supply of winter stores—quite different from Sept. 1.’’—Charles D. Mize, Sedgwick County, Kan.

‘‘I had to feed my bees this fall in my large hives. So I would if I had 11 Jumbo frames. Where hives are stacked up two or three stories high there is not a drop of honey in the lower story.’’—V. Berrien, Ulster County, N. Y.

‘‘The honey crop here was a total failure. We extracted about 10 pounds per colony after leaving plenty of winter supplies, but we will have to feed this back if we have a late spring.’’—A. D. Brown, Sheridan County, Wyo.

‘‘I was looking through my hives and found something unusual, at least to me. I raised out the center frame to look for young brood and in each cell there were four eggs. That put me to looking for queens, and I found two. They seemed to be happy together in the hive and were laying all right.’’—William Nickens, Lewisburg County, Tenn.

‘‘The honey crop in this section of the state was an entire failure as regards surplus. The little honey that we harvested in the early summer from white clover will not more than pay for the sugar for winter stores. Since the 20th of July our bees were merely able to exist on the nectar from the fields. Some colonies did not have over five pounds of honey in the hive in October, in face of the fact that they have been enormously strong in bees right along. I have never experienced such conditions since I entered the business five years ago.’’—Harold A. Breisch, Schuylkill County, Pa.

‘‘Last fall I found a bee-tree that had 271 pounds of honey. This was a white ash tree about two feet in diameter at the stump, and the bees were up about 30 feet. They had built comb up and down in this tree for 23 feet and had three places where they went in and out. The cavity in this tree was about ten inches in diameter. I have found many bee-trees that had comb built 9, 10 and 11 feet long.’’—H. R. Neumann, Marathon County, Wis.

‘‘Thirty-five miles of bee pastures with 700 acres of Hubam clover, which is reported to yield 200 pounds of extracted honey per acre; 200 times 700 equals 140,000 pounds of honey at 30c per pound; 140,000 times 30c equals $42,000. This will be for the coming year.’’—Quite an Optimist. (Mr. Optimist forgot to figure the value of his increase.—Ed.)

‘‘We have one thing here I am sure will be an advantage to us and that is European foul brood. It is ridding this section of black bees. In a short time they will all be gone. Our Italians don’t become infected. About two months ago I inspected about 10 colonies of black bees, and all had European foul brood but one. For the last six years in this section about 200 colonies of black bees have been destroyed by foul brood, but so far not a single colony has been hurt of the Italians.’’—E. T. Maxwell, Decatur County, Tenn.

‘‘Bradford County leads the other counties of Pennsylvania in the production of honey. There were 6729 hives in the county last year, and an average income per colony was $6.50. This makes the entire yield in the county $42,738.50. So, beekeeping in Bradford County is quite an enterprise. Ten years ago beekeeping was a thriving industry throughout the state, but the spread of foul brood wiped out thousands of colonies. With the improved methods for fighting bee diseases the industry has once more become profitable, with the result that thousands of new hives are being placed in the state annually.’’—Phil Browning, New York.

‘‘On one occasion this season at the Government Apiary, at Wauchope, there was proof that, at least on some occasions, bees do transfer eggs to embryo queen-cells. A few queen-cell cups used for queen-raising were left above an excluder on a colony that was about to swarm. On examination after the fourth day, one of the cups was found to contain an egg—an egg, moreover, in a fertile condition, for it eventually produced a queen bee. In this case it seems probable that the egg was transferred from the lower story where the queen was in occupation—both the color and breeding of the queen point to this.’’—Farmers’ Bulletin 129, Department of Agriculture, New South Wales.

JUST NEWS

Editors

IN an effort to introduce Hubam in Germany, Paul Ranft, Leipsig, Ostst. 39, Germany, is anxious to receive small donations of seed, which he proposes to distribute to beekeepers in small packages free. Donations may be sent direct to the above address.

* * *

A French edition of the "Dadant System of Beekeeping," by C. P. Dadant, has just been issued in Quebec.

* * *

The Division of Crop Estimates states that the average yield this season has been 53.8 pounds per colony, as compared with an average of 44.2 pounds last year. Production this year is estimated to have been divided as follows: Comb, 28.7 per cent; extracted, 59.7 per cent; chunk, 11.6 per cent.

* * *

Frank C. Pellett, Associate Editor of The American Bee Journal, reports that he is back at work again after an experience in a hospital where he underwent a surgical operation. Mr. Pellett is expecting greatly improved health as a result of the operation.

* * *

The next international congress of beekeepers will be held in Quebec, Canada, in September, 1923. This will afford an opportunity for beekeepers of this country to meet with beekeepers from the rest of the world. The last international congress of beekeepers was held at Marseilles, France, Sept. 18 to 20, 1922.

* * *

After 10 years of rest, George W. York, former editor and publisher of the American Bee Journal, has again returned to the field of journalism, having launched a new bee journal upon the apicultural seas. "York's Bees and Honey" is to be published monthly at Spokane, Wash., the October-November issue already being in the hands of its readers.

* * *

We have received a series of interesting entomological picture cards from the Bildarchiv-Gesellschaft, Freiburg, Breisgau, Germany, illustrating the reactions of honeybees to various colors. These photographs were made from original negatives by Prof. K. von Frisch of Rostock, and also by Prof. A. Kühn and Max Pohl of Gottingen. Those who are interested in the study of the reactions of bees to colors can no doubt secure these photographs from the above-mentioned society.

* * *

R. L. Parshall, Irrigation Engineer, Colorado State Experiment Station, discussing the deficiency in the water supply for irrigation in the Arkansas and Platte River Valley, says that at the present time the prospects for irrigation water for the coming year are not at all encouraging for this region His report is rather discouraging for beekeepers in that section for next season, but an abundance of snow in the mountains this winter would greatly improve the situation.

* * *

Geo. W. York, Spokane, Wash., who for 20 years was editor of The American Bee Journal, has donated his entire collection of bee books and other beekeeping literature, which he was 40 years in accumulating, to the University of California. The University in accepting this valuable gift has decided to establish the George W. York Library of Apiculture of California.

* * *

Due to the conflict in the dates of meetings of the Western New York, Northern New York and Ontario beekeepers, the Empire State Federation of Beekeepers' Cooperative Association, Inc., has decided to change the date of its meeting to Tuesday, Wednesday and Thursday, Dec. 12, 13 and 14, instead of Dec. 5, 6 and 7, as announced in our last issue.

* * *

The Department of Agriculture of British Columbia has compiled data of the number of apiaries, colonies of bees, and crop of honey in that province for 1922. Figures are given for the several districts within each of the following divisions: Vancouver Island and Gulf Islands, Greater Vancouver, Lower Fraser Valley, Upper Fraser Valley and Chilliwick, Okanogan, Shuswap and Thompson Valleys, and the Kootenays. The total number of apiaries reported is 2143; the number of colonies, 11591. The crop in pounds is reported as 711356, the average per colony being 61.

* * *

The New York State College of Agriculture, Ithaca, New York, has announced a short course in beekeeping to be held February 20 to 23 inclusive. The major part of the instruction will be given by Dr. E. F. Phillips, Bureau of Entomology, Washington, D. C., and Geo. S. Demuth, editor of this journal. These men will be assisted by Geo. H. Rea of the A. I. Root Company, E. W. Atkins of the G. B. Lewis Company, and R. B. Willson, Extension Specialist in Apiculture for New York. Several prominent members of the University faculty will lecture or give interesting addresses which will add greatly to the value and pleasure of the course. A large attendance is expected. Address all inquiries to R. B. Willson, Extension Specialist in Apiculture, Roberts Hall, Ithaca, New York.

OUR HOMES

A. I. ROOT

> The fool hath said in his heart, There is no God.—Psalm 14:1.
>
> Then said Jesus unto the twelve, Will ye also go away? Then Simon Peter answered unto him, Lord, to whom shall we go? Thou hast the words of eternal life.—John 6: 67, 68.
>
> Thy word is a lamp unto my feet, and a light unto my path.—Psalm 119:105.
>
> What God hath joined together, let not man put asunder.—Matt. 19:6.

> Backward, turn backward, O time in thy flight;
> Make me a child again, just for tonight;
> Mother, come back from the echoless shore—
> Take me again to thy heart as of yore.

My good friends, there is a particular reason why I wish to go over once more the turning-point in my life. For two or three years in my early manhood I was in touch with unbelievers, but they gave me no comfort. I think somebody once said that skepticism and unbelief are the most unsatisfactory things ever invented; and I think somebody else added that they are the most ungenteel and uncivil things ever invented. Robert G. Ingersoll was much in vogue about 50 years ago. If I remember correctly he (perhaps indirectly) rather encouraged the practice of suicide; and a number of suicides resulted from his teachings. Years ago a prominent Medina man suggested, as we were talking the matter over, that our churches had better "pitch the Bibles all out of the window." He did not *say* what they should do next. I had good reason to believe that the poor man objected to the Bible just as I did, because one or more of the ten commandments hit us both tremendous blows right fairly between the eyes.* I recall that, one day in the long ago, I had to take a freight train and was several hours in the caboose and had nothing to read. May the Lord be praised that there were a few even then who held fast to the Bible, and one of these, a railroader, had a Bible on his desk. I opened this Bible, and made a vain effort to find something that interested me, but it was dull and dry reading. I told the dear wife, after I got home, my experience with the old Bible. I did *not* tell it to my good old mother, for I knew how badly it would have made her feel. I was not happy, and I was becoming more miserable every day. I tried breaking loose from Satan's clutches, but found myself helpless. One night after I had closed business on the street, and put up the shutters over the windows, just as I was ready to go away and lock the door, I fell down on my knees in the darkness—something I had not done before for years. My prayer was something as follows:

"O God, if there be a God, have mercy on a poor, humble specimen of thy handiwork."

Much to my surprise, the brief prayer had an immediate answer—at least I took it for an answer; and the answer, as nearly as I could make out, was something like this:

"All right, child. What do you want?"

I hesitated a moment and replied, "I want the happy innocence of childhood back again."

I do not know but the little verse at the head of this talk came to my mind, and the answer came so quickly that it startled me, and it was something as below:

"What are you willing to give or forego?"

I think I answered at once out loud to the effect that I would give up everything I had in this world. But Satan still had a hold. He was not ready to give up, and he suggested that I was making a fool of myself, for I *knew* there was *one thing* I would *not* give up. My good friends, I had become very much interested; in fact, I began to feel happy to get just a little glimpse of "the peace of God which passeth *all understanding*;" but as I hesitated the darkness of unbelief began to gather around me again. I think this all happened about the time, or shortly after, when U. S. Grant laid down his terms of "unconditional surrender," and I was made to understand that nothing would answer in my case, but unconditional surrender. Suddenly I caught a glimpse of my old oft-repeated prayer, "Lord, help." Perhaps a verse of an old hymn will explain it better than anything else I can now think of:

> "Here I give my all to thee—
> Friends and time and earthly store;
> Soul and body thine to be—
> Wholly thine forever more.

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* I hardly need tell you, friends, that even now, altho it has been 50 years since the above occurred, somebody has been suggesting, every little while, we should pitch the Bible out of the windows or cut it short, leaving out certain things that happened to hit certain persons. A shorter Bible has been tried; but, so far as I know, it has failed. Attempts have also been made to cut out some of the special miracles—Jonah and the whale, concluding from their feeble human standpoint that things like this were too hard for even the great God of the universe. My suggestion has always been to such, that, if they are going to curtail the Bible at all, they cut it all out; but in some way it seems to continue to hang together through all the ages.

I had started out on the new track, and I was as keen and anxious to know more about it, and to see which way it was going to lead, as I was about any problem in bee culture. And then it occurred to me what I wanted was to get hold of the old Bible that just a few days before was a meaningless book. There was no Bible in my store—in fact, there never had been. I knew the good wife had one, and I rushed home to get it. I began to read it; and the more I read it the more deeply I became interested. Dear "Sue" (bless her memory!) finally suggested that it was after bedtime. I think I replied truthfully, that I was not quite ready. I do not know just how long I read; but when I got to the bedside the dear wife was not asleep, but she was *weeping*; and the tears she shed were tears of *joy*, and not sorrow. Let me digress a little.

I was just then full of experiments in bee culture. In order to test the raising of bees in winter time I had built a little greenhouse partly under ground. In it was a small colony (just a little nursery) with a queen bee. The queen had been laying for some days, but the eggs had not yet hatched out into larvae; and thinking they needed something more than the honey, I was feeding them some rye flour as a substitute for pollen. They were busily engaged in carrying in this pollen, and I could already see the small larvae coming. Well, friends, I had just returned from church, and had listened to one of the most wonderful sermons to me I had ever heard in my life; and as a result I could see myself, my past life, in something the way God sees it. I hurried home, got down in that little greenhouse with the bees, where they were busy at work. I bowed my head and cried over my past sins as God revealed them to me. I cried until the sawdust at my feet was wet, and my whole frame shook with convulsive sobs.* And then I tried, between the sobs, to ask the dear wife to forgive me, and *believe* that I was a changed man from that hour on. She afterward told me she had been praying, and yet the years went by, with no change, and she had somehow got it into her mind that it was not *possible* that *I* should ever get to be a follower of the Lord Jesus Christ.

Right here, brothers and sisters, is the point of this Home talk. When we were courting we were happy. I thought I appreciated the companion God had given me, and I thought I loved her, yet that love was *nothing* at *all* compared with the love when God's Holy Spirit opened my eyes. And this number of the Home papers is to the fathers and mothers, and young people who are courting. There can be no real, happy courtship and life until you two recognize your Creator *first*, and recognize, too, that the most sacred and solemn vow that man or woman *can* take is in agreeing together to unite and build up a home. After my emancipation, as we might call it, *my own wife* whom God gave me was to me the most beautiful and lovable woman on the *face of the whole earth.**

Several weeks after my conversion she said something like this:

"My dear husband, if you are going to continue to love *me* and love the *children* as you have been doing for several weeks past, I shall be the happiest woman living."

And I felt also as if I should be the happiest *man* (or one of the happiest) on this whole earth, as we two worked together and united in bringing our children up in the fear of the Lord.

I hope, dear friends, this Home paper may be the means of stopping at least some of the divorces which are getting to be so common. If just one of the parties, either husband or wife, will put the Lord Jesus Christ first, and study God's holy word day by day, there certainly will not be very much chance of a divorce; and where both of the parties are God-fearing people, divorces ought to be almost if not quite *unknown* in this land of ours. Do you think all the powers of earth or any of the schemes of Satan could have brought about a divorce in our home after what I have told you in the above? See what Paul says below:

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*On the way home from church Mrs. Root surmised what was coming, and soon followed me down into the little greenhouse.

*Let me suggest right here that the Bible tells us we should love our neighbor as ourself. Well, what gave me such *anguish* was that I began to recognize, that the word "neighbor" included the dear wife; and I wish that all *man*kind could feel as I did then, that the *nearest* and *dearest* neighbor any man in the whole wide world *can* have is the wife, the mother of his children. The Holy Spirit suggested to me something like this: "Old fellow, what would you do should the dear wife think exactly as *you* have been thinking?" You know well enough, friends, what has been said about the "double standard" for men and women. If a woman does go so far astray as to forget herself, the result is not only a divorce, expensive suits at law, etc., but guns and pistols, murder and suicides. Read the daily papers and see if you do not find *in any one of them* an account of some awful tragedy right along this line. If the husband is the guilty one, the wife and mother must meekly bear it; but when we turn it around the other way it is a different thing. When the Holy Spirit held a looking-glass before my eyes and said, "Thou art the man," no wonder I should fear and tremble.

My good friend, Loretta Joy, of the Cleveland Plain Dealer, writes recently as below:

"And this hate and scorn were lashed over the quivering shoulders of the wife who now says:

"'I still love him. I was taught and I have always believed that love should mean putting the happiness of the beloved before the happiness of self. I feel it my duty to give him up to this new happiness that he can find. But what of the children? Have I any right to sacrifice them?'

"Of course this 'resigned, loving-wife spirit' is a beautiful thing! But somehow it maddens me! It is so grossly unfair to the whole institution of marriage and the family. Its possibilities are too revolting. A wife does not act for herself and her one family alone. Her decision pounds in one nail or takes one nail away from the whole social organism. Just as women have themselves made the 'double standard' by excusing men for weaknesses they condemn in each other, just so would these maudlin, too-loving wives imperil the whole status of marriage and the family by yielding real rights, real values, to this tawdry, sham, tinsel 'forty-five feeling,' which, after all, means no more to the man than measles to his youngsters."

> For I am persuaded that neither death, nor life, nor angels, nor principalities, nor powers, nor things present nor things to come, nor height nor depth, nor any other creature, shall be able to separate us from the love of God which is in Christ Jesus our Lord.—Romans 8:38, 39.

Of course Paul in the above refers to the close connection between the penitent sinner and his Savior; but where the Lord Jesus Christ comes first in any home it seems to me the matter of divorce or separation should be as utterly impossible in just the way Paul has expressed it.

"YE MUST BE BORN AGAIN."

A vivid illustration of "putting off the old life and putting on the new" is illustrated in the following from one of our good friends:

> When I was a boy, our next neighbor was a rough, illiterate man, of awkward, uncouth appearance, but a kindly, honest man, a good neighbor, but not a Christian. He finally attended some meetings held by the Volunteers of America, and was converted. A few weeks after he got up to give his first testimony. He said in effect: "Neighbors and friends, I've been coming to these meetings and I've found my Savior. I know I'm saved, and I'll tell you how I know it. The other night I was milking my cow, and just as I had a nice full pail of milk she up and kicked it over. Three weeks ago I'd have sworn a blue streak, but I just stood and looked at the milk and looked at the cow and I said "Praise the Lord."
>
> You can imagine the impression the awkward, unkempt, bewhiskered, long-haired man, clad in overalls, made as he gave this talk. To their shame be it said that most of the audience saw only the ludicrous side of it; but I have always felt that he had applied the only real test of genuine indwelling of the Spirit, in that he could take it with him in his daily tasks, no matter how humble, and live every moment by its help. The most glorious moment in a man's life here below is when the Spirit comes into his heart and takes the curses out and puts praise there instead, and this little incident has always stood in my mind as one of the most perfect evidences of real conversion that I ever witnessed. I am glad to say that this man continued in the better life to his death many years after, in spite of many hardships and discouragements.
>
> W. H. Haughwout.
>
> Peebles Building, Oswego, N. Y.

Please note that, in place of the former curses and profanity, he simply said, "Praise the Lord." No wonder people laughed; but I think they did not realize what it meant. The poor converted sinner was praising the Lord because he could feel from the bottom of his heart that the old wicked life was gone *clear out of sight*, forever. I have been through experiences similar to the above; but I fear that I have not very often had the courage or grace to say, "Praise the Lord," right square in the face of disaster.

In closing this Home paper, the last of the year, I want to give you a recent experience. I had been spending quite a little time in prayer before I retired. In the middle of the night I awoke feeling very happy. I dreamed—I am not quite sure *now*, it was *all* a dream—that I heard angel voices in song; and after I was fully awake I managed to recall some of the words. Below is what I heard (and it set me to rejoicing) as nearly as I can make it:

I will believe, I do believe,
  That thou didst die that I might live,
And that thou bidst me come to thee,
  My Savior and my God.

Of course this is somewhat similar to some of the hymns we have; but I have not been able to find anything just like it, nor anything that seems to fit as well to the wonderful melody that came into my *heart* and *soul*, in the middle of the night.

Modern Surgery: What it Has Accomplished.

My father was one of a family of nine children. My mother was one of a family of eleven; but her father had a second wife. I was one of a family of seven, and Mrs. Root and I have given to the world five children. Each one of these five, with one exception, has two children. The one exception is the daughter Constance, who has three—two boys and a girl. From the above you will notice that the fashion of having large families seems to be, I was going to say, going "downhill." But perhaps I had better not say that. There are two extremes in almost everything; and I presume it would be hardly fair or kind to ask the average woman to bear and bring up the number of children that used to be the fashion in olden times. I wish to add, however, that the world agrees, or must agree, that a large number of the great men and women who have blest the world came from a family of at least moderate if not good size. Look about you and see if this is not true. There is a reason for this. Where there is a fair-sized family each one has to get up and dust a little more by himself than where there are only two or even one. Especially is this true where there is only one child. That child has everything done for him, and often has the best of everything so that he is not obliged to "hustle" for himself like each one of a good-sized family. With this in view each one of our five has at least two children. I do not know how much Mrs. Root, the mother, had to do with it in the way of advice in the above.

Some of you may begin to ask what all this has to do with surgery as in the title at the head of this talk. Well, not very much as yet; but listen. The general manager of our institution had only one little girl. You may remember I suggested naming her Kathryn, after the good sister of the Wright brothers, with whom I was in touch, some years ago. Well, the good wife had much trouble in giving birth to the little one—so much so that the doctors declared it would not be safe for her to think of having another child. Perhaps I might say her suffering was so great that, after the little one was born, she began sinking, and finally stopped breathing; and I believe the attending physician gave her up as dead.

The father, however, remembering the many cases in which he had seen, or known of wonderful answers to prayer in such crises, began praying. In fact, he told me that he never prayed for anything in this world as he did that the dear wife and mother might come to life in spite of what the doctors said. And she did finally commence breathing, and in due time became so robust and strong that they began to consider once more the matter of another child; and I think the godly father and mother made it a subject of prayer that, if it was the Lord's will, they might have *a boy* in the family as well as a girl. And here is where the matter of surgery comes in. They said if the same dangerous symptoms should recur as in years before, when she approached childbirth there was a way* in which the little one could be brought into the world, aside from the old orthodox plan adopted since humanity began, and, I might say, since the time of Adam and Eve. Your family physician can explain to you all about it in detail. The unpleasant and dangerous symptoms did appear, and a skillful surgeon was employed. The little "Rootlet" was a year old yesterday, Oct. 20; and it is my pleasure to give you a picture of him.

David Root, who came into the world by the help of modern surgery instead of nature's way.

While we were in Florida last winter Huber wrote something in regard to the new baby that I did not preserve; but, so far as I can recall, it was something like this:

"If we are ever given glimpses of what heaven is like while we are here on this earth, my experience would indicate that these glimpses come in the way of the angelic smiles which the little one gives us when it first begins to recognize its father and mother."

David Root was born Oct. 20, 1921. His grandmother Root's death was on Nov. 28, 1921. On the very day she died—in fact, not many minutes before her death—she went down to our colored man Wesley who was working in the garden and showed him two pictures of the baby. These pictures had just been received. The last letter that she ever wrote to the dear children was dated Nov. 21; and after she had finished her letter she added a postscript as below:

P. S.—Kiss little darling "Dave" for his grandmother Root. Love to all.

It gives me great pleasure to add that the mother suffered little or no pain at all, and has been in excellent health ever since; and furthermore, the bright and robust baby has never been *sick a day in his life.* He and his grandfather are on most excellent terms; and I suppose it is no more than a matter of course that I should regard him as the *brightest* and *prettiest* and most *perfect* baby I ever saw. When he gives me one of his magnificent smiles and shows his rows of beautiful, new pearly teeth, I can almost say what Huber said in the letter he wrote us.

The Starving Victims of the Atrocious Turks.

Just as soon as your eyes strike this, and if you can, get a copy of the Literary Digest for Oct. 21, 1922. Half a million of poor honest and innocent people, mostly women and children, are starving and dying with their homes burned to the ground by the awful Turks. The Literary Digest has advanced $176,000 for a boatload of provisions to stay off starvation for a brief period. The Y. M. C. A., the Y. W. C. A., as well as the Red Cross, are doing their utmost to help, and the President of the United States is backing it all. Every little helps. Do what you can for these suffering people, and God will reward you. Later: I now notice the Red Cross has two millions to feed the starving, and if more is needed it will be forthcoming. Surely a better world is in sight.

A Kind Word from the Farm Journal.

With the exception of two young ladies who preceded me in The Farm Journal, I am now the oldest associate of my Uncle Wilmer Atkinson in the business. One of the first things I learned was the interest, co-operation and good will of A. I. Root towards The Farm Journal, and to return this has been a guiding principle of this office all the time. We never lose a chance to speak a good word for Gleanings and the good people who are back of it.

I remember years 20 ago W. Atlee Burpee, a seedsman of great ability in many lines, told me there were only two papers of the many hundreds which he received at his office every week which he took home with him—they were Gleanings in Bee Culture and The Farm Journal; and the reason he took them home, he says, was they had "souls" to them.

I am much obliged for your letter for making electricity out of wind, and some of our editors will undoubtedly be able to use this.

I hope you are enjoying the good health of four score years, a fitting crown of an active useful life.

With best wishes, Chas. F. Jenkins,
of The Farm Journal.
Philadelphia, Pa., Aug. 15, 1922.

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*Caesarean section.

Classified Advertisements

Notices will be inserted in these classified columns for 50c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column, or we will not be responsible for errors. For special conditions on bee and queen advertising, please write us. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISEMENTS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisements of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

J. F. Moore, Bert Smith, Edward Wilson, Dr. E. Kohn & Son, Ed. Hassinger, C. S. Engle, C. C. Hoover & Sons, Woodward Apiaries, C. J. Baldridge, H. E. Crowther, A. I. Root Co. of New York. J. F. Coyle, R. V. Cox, F. H. Nelson, C. J. Appeldoorn, Emile J. Beridon, Jr., J. L. Leath, R. S. Knight, The Progress Nurseries, H. L. Christopher, Loveitt Honey Co., Rhode Island Red Journal.

HONEY AND WAX FOR SALE.

LIGHT amber honey in 60-lb. cans. Van Wyngarden Bros., Hebron, Ind.

BUCKWHEAT honey of finest flavor, in 5 and 10 pound pails. Chas. Reynders, Ulster, Pa.

FOR SALE—Basswood mixed, also buckwheat in new 60-lb. cans. Bert Smith, Romulus, N. Y.

FOR SALE—Fine quality raspberry-milkweed honey in new 60-lb. cans. P. W. Sowinski, Bellaire, Mich.

FOR SALE—White sweet clover in cases, two 60-lb. cans, 10c per lb., f. o. b. Joe C. Weaver, Cochrane, Ala.

FOR SALE—Clover, amber and basswood honey in new 60-lb. cans, 5 and 10 lb. pails. H. B. Gable, Romulus, N. Y.

FOR SALE—Clover extracted honey in new 60-lb. cans. 120 lbs. net, $15.00. A. J. Norberg, Spring Valley, Ill.

FINE quality, well-ripened white clover honey, 12½c per lb. New 60-lb. cans, two in case. J. G Burtis, Marietta, N. Y.

FOR SALE—Fancy clover comb, $5.25 per case; No. 1, $4.75; 24-section cases, 8 cases to carrier. Ross B. Scott, La Grange, Ind.

FOR SALE—Send for sample of new clover-basswood honey in new 60-lb. cans. J. N. Harris, 502 W. Center, St. Louis, Mich.

EXTRACTED white clover and buckwheat honey, 1922 crop. New 60-lb. cans and 5 and 10 lb. pails. Chester N. Ballard, Valois, N. Y.

FOR SALE—12,000 lbs. of choice white clover honey, well ripened, put up in new 5 and 10 lb. pails. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—Choice new clover extracted honey put up in new 60-lb. cans. Write for prices, stating quantity desired. W. M. Peacock, Mapleton, Iowa.

HONEY FOR SALE—In 60-lb. tins, water-white orange, 13c; white sage, 12c; extra L. A. sage, 10½c; buckwheat, 10c, etc. Hoffman & Hauck, Woodhaven, N. Y.

FOR SALE—Choice white clover honey in new 60-lb. cans, two to a case, at 12c per lb. Sample for 20c to apply on purchase. Kenneth Gallant, Cato, N. Y.

FOR SALE—Fine quality of buckwheat honey, put up in 5-lb. pails at 75c each. Write for prices in lots of 20 pails. Chas. B. Hatton, Andover, R. D. No. 3, Ohio.

FOR SALE—White clover honey in 60-lb. cans and 5-lb. pails, this year's crop, none better. Write for prices. Sample, 10c. F. W. Summerfield, Waterville, Ohio.

FOR SALE—North Michigan clover honey in new 60-lb. cans, two to a case at 11c per lb. in 5-case lots. Prices on smaller lots on application, also sample. J. H. Corwin, Merritt, Mich.

FOR SALE—Very best clover basswood honey. Produced in new combs. Packed in new containers. 60-lb. cans and 5-lb. pails. Sample, 20c. Write for prices. A. C. Ames, Weston, Ohio.

RASPBERRY HONEY—In 60-lb. cans, 2 in a case for $14.40; one in a case, $7.50. Sample by mail, 20c, which may be applied on order for honey. Elmer Hutchinson & Son, Lake City, Mich.

FOR SALE—Extracted white clover honey, 12 5-lb. pails, $9.00; case of two 60-lb. cans, $14.40; buckwheat, two 60's, $10.80. Seward Van Auken, Duanesburg, N. Y.

FOR SALE—Clover extracted; one 60-lb. can, $7.50; two 60-lb. cans, $14.40; buckwheat, one 60-lb. can, $5.40; two 60-lb. cans, $10.20. J. J. Lewis, Lyons, N. Y.

FOR SALE—Spanish needle heartsease honey, fine body and flavor, 5-lb. pails, 12 to a case. Write for price, state quantity wanted. F. W. Luebeck, R. D. No. 2. Knox, Ind.

HONEY FOR SALE—In 60-lb. cans, two cans in each case. Light amber gathered from June 1 to July 15, 11c per pound, also buckwheat, 9c per pound. Robert Conn, Roaring Branch, Pa.

EXTRA quality white honey, $7.20 per 60-lb. can; 14c per lb. in 10-lb. cans on 6 or more cans. 10 lbs. prepaid, $2.00 in third zone, 20c extra each additional zone. Absolute satisfaction. F. W. Lesser, Fayetteville, N. Y.

FOR SALE—Finest quality white clover extracted honey, well ripened and of fine flavor, put up in 60-lb., 12-lb. and 2½-lb. cans, and 10 and 5 lb. pails. R. C. Ortleib, 29 Van Buren St., Dolgeville, N. Y.

OUR 1922 crop of white clover extracted honey is now ready for the market. New cans and cases. Say how much you can use, and we will be pleased to quote you our very lowest prices. E. D. Townsend & Sons, Northstar, Mich.

FOR SALE—Choice clover extracted honey in new 60-lb. cans and cases. Write for prices on carload or case lots; comb honey in Danz. and beeway sections. Packed in six or eight case carriers. Quality unexcelled. J. D. Beals, Oto, Iowa.

HONEY—Best quality clover or buckwheat. 12 5-lb. pails, $9.00 at our station; 2 60-lb. cans, $15.00. 5 lbs. delivered within third zone, $1.20; 10 lbs., $2.00, net weight. GUARANTEED ALWAYS RIGHT. Write for prices on larger quantities. Earl Rulison, R. D. No. 1, Amsterdam, N. Y.

FOR SALE—No. 1 white comb honey, $6 per case; No. 2 white comb, $5 per case of 24 sections; dark comb, dollar per case less; 24-case lots, 50c per case less. Amber and dark extracted, 10c per pound, two 60-lb. cans to case. Amber baking honey in barrels, 8c per pound. Discount on extracted in quantities. H. G. Quirin, Bellevue, Ohio.

CLOVER honey, fine quality, 6-lb. can't-leak can, $1.35; four 5-lb. pails, crated, $4.00, delivered into third zone. 60-lb. can, $7.20, two 60-lb. cans, $14.00 f. o. b. Hugh G. Gregg, Elbridge, N. Y.

CLA-FO-NY Quality Honey (liquid or crystal) clover two 60's (115 lbs. net), $15.00; 15 5's (75 lbs. net), $12.00; buckwheat, 2 60's, $11.50; 15 5's, $9.75. 5 pounds either delivery third zone, $1.20. Satisfaction guaranteed. Clarence Foote, Delanson, N. Y.

FOR SALE—We have fine lots of white clover, sweet clover, basswood, buckwheat and amber honey. Tell us what you want. Prices and samples on request. Good second-hand cans, 60c per case of two cans. A. I. Root Co., 224 W. Huron St., Chicago, Ill.

CHOICE extra fancy white clover honey in new 60-lb. cans, 120 lbs. net, $14.00. Sample, 20c. Write for prices on larger quantities. 100 cases extra fancy Hubam clover honey, same price. Also fancy comb honey, $5.00 per case 24 sections, 8 cases to carrier. Edw. A. Winkler, R. D. No. 1, Joliet, Ill.

OUR 1922 crop extracted honey is a very fancy grade, water white clover, which was left on the hives until thoroughly cured by the bees before extracting, making it very heavy bodied. This thick, rich honey is all packed in new 60-lb. cans, two to the case. Of course, we have to ask a little more for honey of this quality than ordinary honey. When in need of a good article send a dime for a sample, and address your inquiry to D. R. Townsend, Northstar, Mich.

FOR SALE—We can supply honey to beekeepers or other roadside sellers who may need to buy beyond their own supply, packed as follows: 2½-lb. friction top tin cans, 1 dozen in case; 5-lb. friction-top tin cans, ½ doz. in case; 10-lb. friction-top tin cans, ½ doz. in case; 60-lb. square cans, 1 to case; 60-lb. square cans, 2 to case. We have the following kinds of honey: Standard white, alfalfa, sweet clover, California sage, California orange, light amber, amber. Write for prices. The A. I. Root Co., Medina, Ohio.

HONEY AND WAX WANTED.

WANTED—Comb and extracted honey. Fancy yellow wax. C. J. Morrison, 750 Cottage Grove Ave., South Bend, Ind.

WANTED—Honey in ton lots, comb and extracted of all kinds. Send sample. State price. Joe Mlinarits, 8931 Keller St., Detroit, Mich.

WANTED—Comb and extracted honey, carload and less. All kinds of honey and beeswax for sale. Walter C. Morris, 105 Hudson St., New York.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa, Council Bluffs, Iowa.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old cambs, cappings or slumgum. Send for our terms and our 1923 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Ill.

FOR SALE.

FOR SALE—Good second-hand 60-lb. cans, two cans to case, boxed, at 60c per case, f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., Cincinnati, Ohio.

HONEY LABELS—New design. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE—"SUPERIOR" FOUNDATION, "quality unexcelled." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

PORTER BEE-ESCAPES save honey, time and money. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

ADAPTABLE BEEHIVES are sound in principle and are practical. For free information address Geo. P. Wood, Peekskill, N. Y.

THREE-HORSE boiler, $35.00; four-horse engine, $40.00; worth $150.00. $75.00 takes them. J. W. Utter, Amity, Orange Co., N. Y.

FOR SALE—Hubam clover seed grown in rows and kept perfectly clean, therefore absolutely pure. 50c per lb. f. o. b. Holgate, Ohio. Noah Bordner, Holgate, Ohio.

ROBINSON'S comb foundation will please the bees, and the price will please the beekeeper. Wax worked at lowest rates. E. S. Robinson, Mayville, Chau. Co., N. Y.

FOR SALE—A limited number of new bottom-boards, covers and hive-bodies, eight or ten hives, nailed or in flat. A bargain, in cypress and fir. Ray C. Wilcox, Odessa, N. Y.

FOR SALE—A Given foundation press, size 9 x 15 inches, in as good condition as if new. Also 50 or 60 swarms of bees and a lot of surplus hives and combs. Lyman Reed, 25 Vosberg St., Ilion, N. Y.

OPPORTUNITY, nearly new factory building, fully equipped for manufacturing beekeepers' supplies. Building is 40 x 70 feet, besides engine room, two story, electric lights, steam power and heat, on main line D. L. & W. and Rochester Division of Erie. Owners will sell at bargain and on right terms, as have no use for it, being engaged in other business. Communicate with Gledhill & Putnam, Inc., Avoca, N. Y.

FORCED TO SELL.—Conflicting claims on my time have forced me to sacrifice my packing business and apiaries for $1750. This is a snap for the apiarist wishing to live in the fairest part of California, and engage in the best paying end of the bee business. I was unable to supply the demand this year and have orders already for 1923. Inquiries and inspections welcomed. Write for details regarding this opportunity. References on request. G. T. Johnson, 165 Raymond Ave., San Jose, Calif.

WANTS AND EXCHANGE.

WANTED—Foundation mill. Rolls must be in perfect condition. The Stover Apiaries, Mayhew, Miss.

WANTED—Bees on share the coming season, anywhere in New York State. J. K. Dixon, Odessa, N. Y.

WILL exchange bees and queens for an automatic twelve-gauge shotgun. Oscar Mayeaux, Hamburg, La.

WANTED—Comb-back chairs, also old rockers and chests with drawers. John Rick, 434 Oley St., Reading, Pa.

WANTED—Copies of Gleanings for Feb. 1 and March 1, 1914, August 1 and October 1, 1915. W. W. Barnhill, Polk, Ohio.

WILL exchange 1922 spring-hatched Grist Grady Stags for Root or Lewis ten-frame bodies, some manufacture of Hoffman frames, medium brood foundation or hand extractor in good condition. State fully what you have. Shepard Apiaries, Piper, Ala.

WANTED—Old boxes, KD. C. Callaway, Norwood, Va.

WANT Barnes saw outfit equipped for beekeepers' use. State condition and lowest cash price. Amos Miller, Dundee, O.

BEESWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade price, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

WANTED—200 colonies of bees. Almond growers at Arbuckle, Calif., wish tenders for placing about 200 colonies of bees in their orchards during the blossoming season of 1923—about three weeks' time. V. S. Persons, 1216 Hearst Bldg., San Francisco, Calif.

WANTED—Beeswax. We are paying 1c and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address so we can identify it immediately upon arrival, and make prompt remittance. The A. I. Root Co., Medina, Ohio.

BEES AND QUEENS.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

FOR SALE—18 stands of good Italian bees. Mrs. M. E. Andress, Larned, Kan.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

GOLDEN Italian queens, untested, $1.00; six, $5.00. E. A. Simmons, Greenville, Ala.

PACKAGES, NUCLEI and QUEENS for 1923. Get my prices. J. J. Scott, Crowville, La.

PACKAGE BEES—1923 prices and circular free. Pedigree strains. Dr. White Bee Company, Sandia, Texas.

WE are booking orders now for spring deliveries. Write us for prices. Graydon Bros., R. D. No. 4, Greenville, Ala.

LATE QUEENS—For late queens send me the order. Pure three-band Italians. No disease. Low prices. D. W. Howell, Shellman, Ga.

''SHE-SUITS-ME'' queens, line-bred Italians, $1.50 each; 10 to 24, $1.30 each. See back cover of January number. Allen Latham, Norwichtown, Conn.

PACKAGE BEES and QUEENS for 1923. Nothing but pure Italians. No disease. Write me for prices for next spring shipment. Jasper Knight, Hayneville, Ala.

NOW BOOKING PACKAGE BEES. Write for my circular of bees and prices. See other advertisements elsewhere, this issue. C. M. Elfer, St. Rose, Louisiana.

NUCLEI—We are now booking orders for May 1 delivery. Leather-colored, good Italian bees and queens. 1-fr. nucleus with bees, brood, untested queen, $3.50; 2-fr. nucleus, $5.00; 3-fr. nucleus, $6.00. One colony bees with select untested queen, $11.00. We guarantee safe arrival, no disease. We think our queens equal to the best in prolificness, the bees hustlers in gathering honey. Weber Brothers Honey Co., Rialto, Calif.

FOR SALE—Bright Italian queen, 1, $1.00; 12, $10.00; 100, $75.00. Safe arrival guaranteed. T. J. Talley, Greenville, R. D. No. 3, Ala.

GOLDEN QUEENS for 1923, the bright kind. Satisfaction guaranteed. Will begin shipping April 1. Price, $1.00 each or $10.00 per dozen. E. F. Day, Honoraville, Ala.

POOLE'S three-banded Italian queens are guaranteed to arrive safely and give satisfaction. Untested, 80c each; 25 or more, 75c; tested, $2.00. Rufus Poole, Greenville, Ala.

WE are booking orders now for spring delivery for the famous ''Colorado Queens.'' Send your order early so as to be sure to get your queens. C. I. Goodrich, Wheatridge, Colo.

I AM booking orders now for next spring delivery, 3-frame nuclei and queens at the same price as this year. Caucasian or Italian race. Peter Schaffhouser, Havelock, N. C.

VERY LOW PRICES on nuclei and package bees for early spring delivery. Black bees with Italian queens, also fine stock Italians. No disease. A. J. Heard, R. D. No. 1, Bonaire, Ga.

BEES BY THE POUND — Also QUEENS. Booking orders now. FREE circulars, giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas, E. B. Ault, Prop.

FOR SALE—Leather-colored Italian queens, tested, until June 1, $2.50; after, $2.00. Untested, $1.25; 12, $13.00. ROOT'S GOODS, ROOT'S PRICES. A. W. Yates, 15 Chapman St., Hartford, Conn.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, $1.00 each; $10.00 per dozen; $75 per 100. Pure mating, safe arrival and satisfaction guaranteed.

PINARD'S quality of Root's and Prof. Coleman's strain of bees and queens. Booking orders for spring delivery. Promptness and satisfaction my motto. Prices right, circular free. A. J. Pinard, Morgan Hill, Calif.

PACKAGE BEES for 1923—Italians, $2.00 per lb. Tested queens, $1.50 each. Frames of brood, $1.50 each. Mixed stock, 10% discount. Liberal discount for large orders or late shipments. No disease. T. W. Livingston, Norman Park, Ga.

LET me save you money on your 1923 package bees, nuclei and queens. Book early and not be disappointed. Queens balance of season, 85c; 6 or more, 65c; after Oct. 20, $1.00 straight. Everything guaranteed. J. L. Morgan, Tupelo Honey Co., Columbia, Ala.

FOR SALE—My entire bee business consisting of 325 colonies of bees in two-story hives and lots of honey with complete extracting equipment. A $4000 deal; $2500 cash necessary. Time on balance. For full details and description, address H. R. Fisher, 303 S. 8th St., Montrose, Colo.

PACKAGE BEES—2000 big, strong, healthy colonies will be ready to supply PACKAGE BEES in the spring. Italian or Carniolan QUEENS. Let me quote prices and book your order early. A small deposit reserves shipping date. Circular free. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

FOR SALE, 1923, PACKAGE BEES—All bees are shipped on standard Root frame, emerging bees with honey, April 25 to May 30. 2-lb. package three-banded Italians, $5.00; 3-lb. package, $5.75; 4-lb. package, $6.50. June 1 to 30th: 2-frame nuclei with untested queen, $4.75; 3-frame, $5.00; 4-frame, $5.75. An untested queen with each package or nucleus. Safe delivery guaranteed, free from any contagious bee disease. Certificate will accompany each shipment. No shipment of bees by parcel post. Send 15 per cent to book order. A. J. Lemoine, Moreauville, Box No. 55, La.

ITALIAN BEES AND QUEENS—One-pound to five-pound packages, one-frame nuclei to full colonies, shipped when you want them. You will be pleased with our stock, our service and our prices. Certificate of inspection certifying freedom from disease with each shipment. Write for our prices before you order. White Clover Farm and Apiary, Hamburg, La.

PLACE your early orders now for queens and package bees. Golden Italian and Caucasian queens, April 1 to May 15, 1923. Untested, 1, $1.50; 12, $15.00; 25, $1.00 each; 2-lb. package bees, $5.00; 3-lb. package, $6.50; 20% off above prices after May 15. Golden Italian breeders, $15.00 to $20.00. Safe arrival guaranteed. Terms, 25% with order. Sarasota Bee Co., Sarasota, Fla.

FOR SALE—Pure Italian bees and queens, 3-banded, 2-pound packages with selected queens; 1-5, $5.00; 5-25, $4.75; 25 or more, -4.50, delivered. Queens, 1-50, $1.00 each. 25 per cent cash books order, balance a few days before shipping season begins. Shipping season opens April 15. No disease, safe arrival and satisfaction. We ship only the best. W. C. Smith & Co., Calhoun, Ala.

PACKAGE BEES FOR 1923—Three-band Italians, bred for business. A 2-lb. package of the Yancey hustlers with a select untested queen for $5.00; 25 or more, $4.75 each. Attractive prices on large lots One-fifth cash books your order. Order early and make sure of shipping dates. We do not accept more orders than we can fill promptly. Caney Valley Apiaries, Bay City, Texas, Yancey Bros., owners.

HIGHEST PRICED QUEENS ON RECORD.—Doesn't mean that we sell queens higher than any one else but that we breed from this kind. We have two breeding queens that have made wonderful records and we are now booking orders for package bees and queens from them to be delivered next spring. Write for prices and the story of these queens. J. M. Cutts & Son, R. D. No. 1, Montgomery, Ala.

GOLDEN ITALIAN QUEENS AND BEES ready April 5 to 15, 1923. Untested queens, 1, $1.00; 6, $5.00; 12, $10.00; 100, $75.00. 1-fr. nuclei with queen, $3.00; 2-fr. nuclei with queen, $5.00; 1-lb. package with queen, $3.00; 2-lb. package with queen, $5.00. It costs no more to get the best. No disease. Health certificate with each shipment. Safe arrival and satisfaction guaranteed. 20% will book your order for spring delivery. J. F. Rogers, R. D. No. 3, Greenville, Ala.

PACKAGE BEES for spring delivery. Vigorous leather-colored Italian queens, three-banded stock; also bees in packages. Every queen I sell is young, also laying, and 90 per cent of them are purely mated. These queens are from select breeding queens, and can not be surpassed, being a credit to the beekeeping world. My bees are absolutely healthy, and are thoroughbreds. Unsolicited testimonials vouch for satisfaction given. Three-frame nuclei, with queens, a specialty; also ship combless packages. Shipments begin April 15, depending upon weather conditions. Safe arrival guaranteed, or replacement or money refunded. Write for my circular showing reduced prices, quality of stock, testimonials. Order early. Now booking orders. C. M. Elfer, St. Rose, Louisiana.

E. D. TOWNSEND, Northstar, Michigan, of the firm of E. D. Townsend & Sons, has his winter home at Marksville, La., among the large shippers of package bees. Some of these beekeepers are mighty good beekeepers, but poor salesmen. A year ago I sold several hundred packages of bees for the above producers, and they have asked me to sell for them again during next season and I have decided to do so. No small orders will be accepted, and none but three and four pound packages, with comb of sealed brood and honey, will be handled. If you can use from 25 to 500 packages, the kind that brings in the full crop of honey the first season, you will make a mistake if you do not get my very low jobbing prices before buying. Address me at Northstar Michigan until December 15, later at Marksville, La.

MISCELLANEOUS.

THE BEE WORLD—The leading bee journal in Britain, and the only international bee review in existence. It is read, re-read and treasured. Will it not appeal to you? Specimen copy free from the publishers. The Apis Club, Benson, Oxon, England. Send us a post card today. It is well worth your little trouble.

MEDICINAL roots and herbs are very profitable to grow. We especially recommend growing Golden Seal which with good care will yield as high as $10,000 per acre for each crop. It takes several years to mature but will average $1000 a year. Special Crops, a monthly paper, tells how. Sample copy, 10c. $1.00 per year. Address Special Crops Pub. Co., Box "G," Skaneateles, N. Y.

ANNOUNCEMENT.—Mr. W. J. Redfearn has entered the business of Indianola Apiary. Mr. Redfearn has had several years' experience with Mr. J. J. Wilder, Waycross, Ga., and comes well recommended by him. My old and new customers may expect the same business methods in promptness and square dealing. J. W. Sherman, Valdosta, Ga.

HELP WANTED.

WANTED—An experienced modern queen-breeder, capable of all kinds of work connected with apiaries operated for the purpose of nuclei shipping and queen-rearing. State wages and give references. A. R. Irish, Savannah, Box 134, Ga.

WANTED—On a large farm, a man of energy and experience to take full care of bees, and during season of the year when bees do not require attention to do other work. Home apiary is on a state road and bee man must be a person of good address and a good salesman, neatness and accuracy essential. Records of colonies kept. Salary $20.00 per week. Good house equipped with running water, furnace and electric light fixtures, rent free. Do not apply unless you would be interested in developing the business and would come intending to stay. Address Mount Hope Farm, Williamstown, Mass.

SITUATION WANTED.

WANTED—For next season, job as queen-breeder, either on shares or salary. Am an expert. Reference given. J. C. Duett, East Tallassee, Ala

TRADE NOTES.

Inasmuch as we expect to discontinue listing the following articles in our general catalog we are offering them at a big reduction in order to close out present stock.

For Shipment from Medina, Ohio.

14	C472802—Root capping-melters, price each	$12.00
15	C472803—Dadant uncapping-cans, price each	13.00
14	C472808—Boardman solar wax-extractors, price each	19.00
50	C271801—Demuth winter cases complete, nailed, slightly shopworn. Price each	.50
60	C261602—Metal top telescope cap covers with inner cover, 8-frame, K. D., price each	1.50
65	C262606—Metal top telescope cap covers with inner cover, 10-frame, K. D., price each	1.60
3	C261601—Metal top telescope cap covers with inner cover, 8-frame, nailed and painted, price each	1.90
2	C262601—Metal top telescope cap covers with inner cover, 10-frame, nailed and painted, price each	2.00
4	C271701—Dovetailed winter cases, 8-frame with wood cover complete, nailed and painted, price each	2.75

1 C271702—Crate of 5 dovetailed winter cases, 8-frame, with wood cover, complete, K. D., price per crate	6.25
250 one-pound bee-shipping cages with feeder pan, K. D., price each	.30
240 two-pound bee-shipping cages with feeder pan, K. D., price each	.40
172 three-pound bee-shipping cages with feeder pan, K. D., price each	.50

The above cages are well made and are very satisfactory for shipping bees without combs by express.

195 C249001—Twin-mating nuclei, in the flat, put up in crates of five. Price per crate	4.75
2 C492001—One and one-half horse-power Busy Bee gasoline engines. Price each	35.00
4 one-half inch honey pumps. Price each, complete with fittings, $7.00; complete without fittings	5.00
6 Dadant electric wire imbedders. Price, each	.75
80 Bee Models—The Anatomy of the Bee, price, each	.25
100 lbs. C490561—Crate staples, 1½ x ¾-inch, price per pound	.12

In addition to the above bargains we have in stock 5000 second-grade Hoffman frames standard size 9⅛ x 17⅝, packed in cartons of 100 only, which we offer at the special price of $5.00 per hundred as long as present stock lasts. Sample sent on request.

Above prices are strictly net f. o. b. Medina, Ohio.

For Shipment from New York City, N. Y.

5 C271702—Dovetailed winter cases, 8-frame with metal cover, in the flat, packed in crates of one. Price each	2.00
20 C271703—Dovetailed winter cases, 8-frame with metal cover, in the flat, packed in crates of five. Price per crate	9.50
7 C272702—Dovetailed winter cases, 10-frame with metal cover, in the flat, packed in crates of one. Price, each	2.10
8 C271701—Dovetailed winter cases, 8-frame with metal cover, nailed and painted. Price, each	2.75
7 C272701—Dovetailed winter cases, 10-frame with metal cover, nailed and painted. Price each	2.90
6 C271702—Dovetailed winter cases, 8-frame with wood cover, in the flat, packed in crates of one. Price each	1.40
25 C271703—Dovetailed winter cases, 8-frame with wood cover in the flat, packed in crates of five. Price per crate	6.25
6 C271701—Dovetailed winter cases, 8-frame with wood cover, nailed and painted. Price each	2.25
5 C272702—Dovetailed winter cases, 10-frame with wood cover, in the flat, packed in crates of one. Price, each	1.55
45 C272703—Dovetailed winter cases, 10-frame with wood cover, in the flat, packed in crates of five. Price per crate	7.00
2 C272701—Dovetailed winter cases, 10-frame with wood cover, nailed and painted. Price each	2.50

The above prices are subject to stocks on hand and are strictly net F. O. B. New York. Send all orders to The A. I. Root Company, Medina, Ohio.

Back in Our Florida Home.

May God be praised for the triumph of prohibition in Ohio once more, in spite of all that the "prince of darkness" could bring to bear. And may God be praised also that Judge Florence Allen has been recognized and sent away up to the Supreme Court of Ohio to stand for purity, righteousness and temperance. A. I. Root.

PATENTS Practice in Patent Office and Court.
Pat. Counsel of The A. I. Root Co.
CHAS. J. WILLIAMSON,
McLachlan Bldg., Washington, D. C.

The Early Bird Catches the Worm

PLAN THE NEW SEASON NOW

Make up your list of supply needs and write us. It will pay you to order early and prevent later and possible unavoidable delays. We solicit your 1923 business on the basis of fair prices, quality goods and excellent service.

The A. I. Root Company of Iowa
Council Bluffs, Iowa

Seeing California From a Roadster.

Continued from page 782.

tance. The apples here are extremely large, entirely free from worms, fine-flavored, fair and uniform in size, and they are on the market practically the whole year.

From the town of Santa Cruz we turned toward the mountains and climbed a beautiful pass which took us miles along their ridge through stately redwood forests, which we could thoroughly enjoy on account of the safe and perfect road.

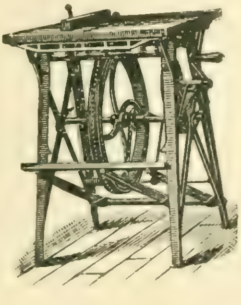
And then we came down into Los Gatos in the Santa Clara Valley. This is a wonderful valley for the deciduous fruits such as prunes, apricots and peaches, and every year thousands of visitors come for ''blossom day.'' We drove through the miles and miles of orchards, many of which were receiving copious irrigation to help set fruit for next year, through San Jose and on through acres of truck gardens, through the Bay cities, so called, although to me they seem fused into one long city between the Berkeley hills and San Francisco Bay, and reached Berkeley refreshed and more in love with our adopted state than ever before. Next month I will tell something of our trip back through the inland route.

ROOT QUALITY SUPPLIES
BEES AND QUEENS.
Authorized Distributor for St. Louis district.
Send for Catalog.
O. G. RAWSON, 3208 Forest Place,
East St. Louis, Ill.

BEEKEEPERS' SUPPLIES.
The kind you want and bees need. Good stock of the A. I. Root Co.'s make of goods on hand. Catalog free. Beeswax wanted.
ALWAYS ON TOP
J. NEBEL & SON SUPPLY CO., High Hill, Mo.

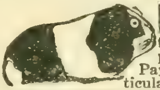
BEE CANDY Just what you want to use when you pack your bees this fall. This candy will save many colonies that are short of stores. Put up in large paper plates just right for your hive. Send for circular and price, also catalog of supplies.
H. H. JEPSON
182 Friend Street. Boston 14, Mass.

BARNES' HAND & FOOT POWER MACHINERY
This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.
Machines on Trial
Send for illustrated catalog and prices.
W. F. & JOHN BARNES CO.
545 Ruby Street
ROCKFORD, ILLINOIS.



INDIANOLA
APIARY COMPANY
Italian Bees and Queens, bright golden and 3-banded. Orders booked for season of 1923 as follows:
One-lb. package Bees with untested Queens, $3.00; Two-lb. package Bees with untested Queens, $5.00; Three-lb. package Bees with untested Queens, $6.00. Ten per cent discount on orders of $25.00 or more. Thirty years' experience, hundreds of satisfied customers. Your orders solicited, satisfaction guaranteed.
J. W. SHERMAN, Valdosta, Ga.

American Poultry Journal
Oldest, Largest and Best
4 MONTHS' TRIAL 25 cts.
1 Yr. 75c 2 YEARS $1 5 Yrs. $2
Averages over 100 pages per issue—tells how to feed, house and breed; how to secure high egg production; how to hatch and rear poultry successfully. Established 1874. Only 25c for 4 mos. Stamps accepted.
American Poultry Journal, 86-523 Plymouth Ct., Chicago



RAISE GUINEA PIGS
for us. We buy all you raise. Big profits—large demand—easily raised. Pay better than poultry or rabbits. Particulars and booklet how to raise FREE.
CAVIES DISTRIBUTING CO., 3145 Grand Ave., Kansas City, Mo.

MASON BEE SUPPLY COMPANY,
Mechanic Falls, Maine.
From 1897 to 1922 the Northeastern Branch of The A. I. Root Company.
PROMPT AND EFFICIENT SERVICE
BECAUSE—Only Root's Goods are sold.
It is a business with us—not a side line.
Eight mails daily—Two lines of railway.
If you have not received 1922 catalog send name at once.

Wishing my many customers and friends a Merry Christmas and a Happy Prosperous New Year and soliciting your future correspondence and patronage.
INDIANOLA APIARY
VALDOSTA, GEORGIA

PATENTS
I make a specialty of patents, trade-marks and copyrights. Protect and profit by your ideas. Advice and terms on request. Eleven years' active practice before U. S. Patent office. Write today. Lester L. Sargent, patent lawyer, 524 Tenth St., Washington, D. C.

Our Guarantee and Advertising Conditions

Believing that all the advertisers in this journal are trustworthy, we make the following guarantee of our advertising, together with a statement of the conditions we must exact both from our advertisers and from our subscribers who may patronize such advertisers:

OUR GUARANTEE (subject to conditions herein mentioned): We will make good to paid subscribers the loss of money that may be sent to any deliberate swindler or irresponsible advertiser by reason of any misleading advertisement that may be printed in our columns.

We will promptly discontinue the advertisement of any advertiser against whom a clearly valid complaint is made by a subscriber, and such advertiser will not be restored (if at all) to our columns until he has fully satisfied such complaint; furthermore, if we find that the facts sworn to in affidavit by the complainant and the circumstances warrant it, we will then not only exclude the advertiser from our columns, but at our own expense will proceed (by law, if necessary) to compel him to make restitution or to secure his proper punishment.

WHAT WE DO NOT GUARANTEE: We will not guarantee against bankrupts sanctioned by the courts. We will not guarantee the settlement of disputes between subscribers and honest advertisers, nor against loss and delay caused by honest advertisers who may be unable to fulfill conditions or contracts because of innocent misfortune or unfavorable conditions beyond their control. We will not guarantee any deal for bees and queens in which the purchaser advances the cash to the queen or bee rearer without an arrangement, either through a bank or express company, whereby the purchaser can examine the bees or queens upon arrival and before the cash is released to the shipper—wishing our subscribers to take the same business care we ourselves would take in making a deal for queens or bees and trusting our ''cash in advance'' to those only who we know by experience have an established record of honest business dealing. (In making this last condition, we in no way challenge the right and propriety of the honest, businesslike, prompt queen or bee rearer to ask pay in advance, either the whole or part, for he is worthy of such confidence, has proved himself, and can secure orders on cash-in-advance terms. But the purchaser should know his bee or queen dealer, if he is to advance the cash, and if he does so it must be at his own risk—not ours). We will not guarantee the purity of any seed advertised nor any nursery stock, as nurserymen ordinarily will not do this themselves; but any seedsman or nurseryman advertising in our columns will have given us excellent references in advance, and our readers may consder this fact in their favor. We will not guarantee advertisers more than one month after the last appearance of their advertisements in our columns. We will not guarantee temporary advertisers for ''help wanted,'' ''position wanted,'' nor advertisers of single sales or of small or second-hand articles, in which transactions the terms of bargain and payment are special and the purchaser can, by taking care, guard his own interests.

CONDITIONS INCUMBENT UPON OUR SUBSCRIBERS: In order that our subscribers may secure the benefit of our advertising guarantee, in case of need to do so, they must mention in writing to advertisers that they are replying to an advertisement seen in Gleanings in Bee Culture. They must give notice of complaint against an advertiser within one month of the time of the transaction complained of, and only after having made written complaint to the advertiser in question; such complaint to us must be in the form of a sworn affidavit as to the facts set forth in the complaint, if the complainant wishes us to take up his claim against the advertiser; the right of examination of the article to be purchased before payment for it, must be demanded and made in all cases wherein the purchaser does not know to his full satisfaction the dealer of whom he is to purchase. Our subscribers will be solely responsible for the terms they agree to with advertisers and must use all reasonable caution and diligence in making such terms and in satisfying themselves of the conditions and quality of any article or commodity offered for sale.

CONDITIONS INCUMBENT UPON OUR ADVERTISERS: We reserve the right, at any time, to cancel any advertising contract and discontinue advertisement, and refund, pro rata, for space not furnished under contract. Every advertiser, unless well known to us and with an established record for honest and prompt dealing, will be required to furnish satisfactory credentials as to both character and financial standing, the endorsements of a local banker, postmaster and official, or three other endorsements equally as good, being asked for by us. Queen and bee rearers, who seek to advertise in our columns, must furnish not only satisfactory character and financial references, but must sign our Code for the Sale of Queens and Bees, answer our questionnaire as to their beekeeping and apiary conditions; and, if new in the business of selling queens and bees, must furnish us with the endorsement of at least five reputable beekeepers or a beekeepers' society, or give an indemnity bond, or furnish us with both the endorsement of beekeepers and bond. All advertisers must not only deal honestly, but they must follow correct business practice, be prompt in business correspondence and in the delivery of goods, or else expect to be barred from our advertising columns for such business delinquencies.

WHAT WE SEEK TO ACCOMPLISH: By this guarantee and its conditions we seek the accomplishment of two purposes: to drive the unreliable advertiser out of our columns and even punish him by law if he so deserves and it is possible to do it; to be relieved of the burden thrown upon us in the past by the unwise deals of our readers and unjust complaints against honest advertisers.

GLEANINGS IN BEE CULTURE.
The A. I. Root Co., Publishers.

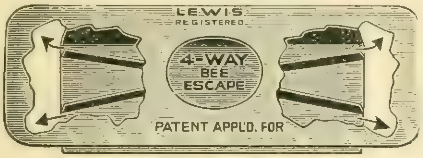
The Co-operative Movement. – Contin'd from p. 771.

as dangerous to the life of a co-operative enterprise are: (1) No definite economic plan; (2) co-operation as a side issue; (3) co-operation attempted in isolated units; (4) lack of proper management; (5) association with politics of any kind.

A beekeepers' Utopia is still invisible in the sky through the most powerful telescopes. Patience, willingness to attempt something new, persistence and hard work alone can bring us nearer to the goal we seek. The door to producers is now open. Let us enter before it is too late.

Schoharie, N. Y.

LEWIS 4-WAY BEE ESCAPES



Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal. Price each, 18c prepaid. Made by

G. B. LEWIS COMPANY, Watertown, Wis., U. S. A.
For Sale by All Dealers.

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NORTHERN BEEKEEPERS

A MIGHTY INTERESTING PROPOSITION

VERY LOW PRICES
ON
NUCLEI AND PACKAGE BEES

FOR EARLY SPRING DELIVERY

Black bees with Italian Queens. Fine stock of Italians. No disease. Abundance of experience as shipper and receiver of bees insures the service you should receive. A postal brings prices and detailed information.

A. J. HEARD, BONAIRE, GA.

BEES TO CANADA

Package bees at reduced prices; highly bred Italian queens, leather-colored, three-banded stock; thoroughbred quality, prolificness guaranteed. I ship to various parts of the United States and Canada every spring; unsolicited testimonials and repeat orders prove satisfaction. My bees are healthy. Safe arrival or replacement or money refunded guaranteed. Shipments begin about April 15. Order early and be in time. Three-frame nuclei a specialty, and have shipped them safely for years, not only to northern, eastern and western parts of the United States, but also to Canada. Also shipped successfully to the Virgin Islands. Write for my circular of special offer on three frame nuclei and combless packages.

C. M. ELFER, ST. ROSE, LOUSIANA

HONEY We just received several carloads of beautiful Honey. Roadside beekeepers and those supplying a family trade will do well to take advantage of these bargain prices:

In 60-lb. Tins—White Orange, 13c lb.; White Sage, 12c lb. Extra L. A. Sage, 10½c lb.

GLASS AND TIN HONEY CONTAINERS.

2½-lb. cans, crates of 100............$4.50
5-lb. pails (with handles) crates of 100.. 7.00
10-lb. pails (with handles), crates of 50. 5.25
60-lb. tins, 2 per case, new $1.20 case; used 25c

WHITE FLINT GLASS, WITH GOLD LACQUERED WAX LINED CAPS.

8-oz. honey capac., $1.50 per carton of 3 doz
16-oz. honey capac., $1.20 per carton of 2 doz.
Qt. 3-lb. honey capac., 90c per carton of 1 doz.

HOFFMAN & HAUCK, INC.
Woodhaven, New York

GET IT FROM THE FACTORY DIRECT

KITSELMAN FENCE

"Saved at Least $20," writes W. W. Fuller, Carmi, Ill. **You, too, can save** by buying direct at Lowest Factory Prices. **WE PAY THE FREIGHT.** Write today for Free 100-page Catalog of Farm, Poultry and Lawn Fence, Gates, Posts and Barbed Wire.

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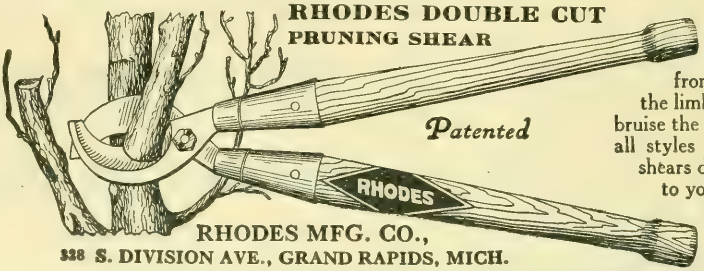
"Best" Hand Lantern

A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. **Agents wanted. Big Profits. Write for Catalog.** THE BEST LIGHT CO.
306 E. 5th St., Canton, O.



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Patented

THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door. Write for circular and prices.

RHODES MFG. CO.,
328 S. DIVISION AVE., GRAND RAPIDS, MICH.

You can have cash for your wax and old combs or cappings at the market price, or we allow a little more in exchange for supplies. Write for our terms and prices.

"Falcon"

SUPPLIES --- QUEENS --- FOUNDATION

W. T. FALCONER MFG. COMPANY
FALCONER, NEW YORK (Near Jamestown).
"Where the best beehives come from."

Ask for Catalog. Booklet, "Simplified Beekeeping for Beginners," free.

QUEENS *Package Bees Nuclei* **QUEENS**

For years we have been shipping thousands of pounds of bees all over U.S.A. and Canada. Now is the time to place your order for spring. Send for our free 1923 circular. We can save you money by ordering early.

The Very Best of Queens and Bees.
ITALIANS — CARNIOLANS — GOLDENS.

Nueces County Apiaries
Calallen, Texas

JUST AN

HONEST MARKET

FOR YOUR

RAW FURS

Price List ready November 20.

I solicit your shipments with the understanding that I will either satisfy you with returns or pay all transportation and return your own goods.

GEO. E. KRAMER
VALENCIA, PA.

Honey Containers

We have some interesting prices to offer on honey containers; send us a list of your requirements and let us quote you our prices.

2½-lb. cans in reshipping cases of 24 and crates of 100 and 500.
5-lb. pails in reshipping cases of 12 and crates of 100 and 200.
10-lb. pails in reshipping cases of 6 and crates of 100.
1-gallon square or oblong cans with 1¾-inch screw cap in boxes of 6.
1-gallon square or oblong cans with 1¾-inch screw cap in crates of 100.
60-lb. square cans with 1¾-inch screw cap in cases of 2 cans.
16-oz. round glass jars in reshipping cases of 2 dozen.
6½-oz. tin top tumblers in reshipping cases of 4 dozen.
Shipping cases for comb honey for any style sections in the 24-lb. or 12-lb. size.
Send for our catalog showing full line of Bee Supplies.

AUGUST LOTZ CO.
BOYD, WISCONSIN.

1923--NUCLEI and A. I. ROOT BEE SUPPLIES--1923

One extra Pound of Bees With Each Nucleus and Shipped on Capped Brood.

Seventeen years of experience has taught us that a three-frame nucleus, if received before May 15, will gather a surplus crop of honey. With the extra pound of bees you are doubly assured of that fact. I would be pleased to have Beekeepers, who have become dissatisfied with pound packages and nuclei, to try our nuclei.
3-frame Nuclei of Italian Bees, with queen, $5.00 each. 3-frame Nuclei of hybrids, with Italian queen. $4.50 each. We guarantee safe arrival and free from disease and satisfaction.

"To whom it may concern: I have this day, Sept. 22, 1922, completed the inspection of the yards of A. R. Irish and found them free from contagious bee diseases.—S. V. Brown, State Inspector of Apiaries."

A. R. IRISH, *Nuclei Specialist,* SAVANNAH, GA., BOX 134

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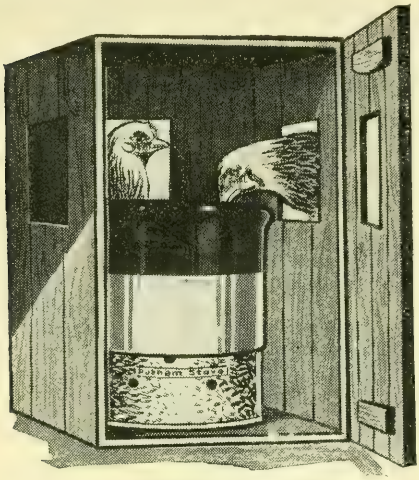
You ought to deposit part of your earnings regularly in this bank. Deposits received by mail.

The SAVINGS DEPOSIT BANK CO.
THE HOME OF THE HONEY-BEE MEDINA, OHIO

You Can Get More Eggs



Little Putnam Stove keeps water unfrozen—not hot.

Over 90% of the Egg Is WATER

Give your fowls all the pure *unchilled* water they can drink, and watch them shell out the eggs. One of my Little Putnam Stoves will keep enough water unfrozen to supply 30 or 40 fowls, even in the coldest weather. This Stove holds 3 pints of oil—requires no attention except a monthly filling, due to my patented burner. It's fireproof and non-explosive—can be operated anywhere. You can run it all winter at a cost of from 20 to 30 cents. You'll get enough more eggs the first month to pay for it.

Little PUTNAM Stove

$2.00 Postpaid

can also be used as a heating unit for an easy-to-make and easy-to-operate Oat Sprouter. Full directions for making the Sprouter are packed with every Little Putnam Stove, or I will mail a set free and promptly if you will request it, and send your dealer's name.

GUARANTEE—I guarantee the Little Putnam Stove to give satisfaction, or it may be returned in ten days and the money paid for it will be promptly refunded. Most dealers keep it. If yours does not send me his name and $2.00, check or money-order, and I will send you a stove post-paid.

Little Putnam Stove

I. PUTNAM Route 1260-S ELMIRA, N.Y.

World's Best Roofing at Factory Prices

"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofing, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Save money—get better quality and lasting satisfaction.

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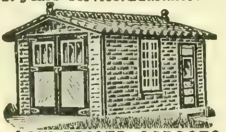

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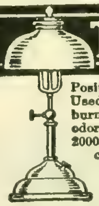

Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles. 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog. AGENTS WANTED EVERYWHERE.

THE BEST LIGHT CO.
306 E. 5th St., Canton, O.

DECEMBER CLEARANCE SALE

We list the following items of odd lots which we offer at a low price before inventory. Terms, net cash, F. O. B. cars Lansing. All orders subject to prior sale.

6	Dadant electric imbedders, each	$ .75
15	Danz. empty hive-bodies, K. D., each, 75c; five for	3.50
30	10-frame N. Supers for 4¼ x 4¾ x 1½-inch sections, complete except sections and foundation, at rate of 5 for	4.25
1500	Thumbscrews for old-style T supers, per 100	1.50
	The lot for	15.00
750	Weis Fibre Honey containers, 6-oz. size, per 100	2.00
	The lot for	12.00
300	Weis Fibre Honey Containers, 5-lb. size, per 100	4.00
	The lot for	11.00
35	Shipping Cases 12-lb. for 4¼x1½ plain sections. The lot for	4.25
30	Comb-honey Carriers for 24-lb. 4x5 shipping cases, 5 for	6.50
	The lot for	36.00
30	Hotbed Sash, complete in flat except glass, 5 for	7.75

Headquarters always for Root's Goods in Michigan.

We Want Beeswax.

Get our prices on Friction-top Pails and Honey Glass jars.

M. H. HUNT & SON

510 North Cedar St. **LANSING, MICH.**

4000 Nuclei or Packages for 1923

SUPERIOR ITALIAN QUEENS
FULL COLONIES, NUCLEI
POUND PACKAGES

WRITE FOR CIRCULAR

CYPRESS BEE SUPPLIES

Hive-bodies, Covers, Bottoms, Supers, Frames. We can furnish you the best of the above at a fair price. Let us quote you.

THE STOVER APIARIES

MAYHEW, MISSISSIPPI

WE'LL SUPPLY YOU

BEE SUPPLIES

THAT ARE MADE TO SATISFY

Let us quote you prices before you place your order, and you will not be sorry.

Illustrated Catalog sent on request.

The best market prices for your beeswax.

WRITE TO

A. H. RUSCH & SON CO.

REEDSVILLE, WISCONSIN

Big Reduction

--ON--

Bee Supplies

Shipping cases	$30.00 per 100
Slotted section-holders	$3.00 per 100
Sections, 1⅞, No. 1	$10.00 per 1000
Job lots of frames, regular size	$3.00 per 100
Standard Hoffman frames, 9⅛ deep	$4.50 per 100
Unspaced wedged top-bar frames, 9⅛ deep	$2.75 per 100

Send for Catalog and Price List.

CHARLES MONDENG

146 Newton Avenue N. and
159 Cedar Lake Rd.
MINNEAPOLIS, MINN.

THERE IS NO
GIFT
FOR A
BOY
A GIRL
OR A
FAMILY
EQUAL
TO
A YEAR OF

THE YOUTH'S COMPANION
"Every Thursday"

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NO OTHER INVESTMENT FOR YOUR FAMILY EQUALS THIS

Every New Subscriber who cuts out this slip and sends it with $2.50 for The Youth's Companion for 1923 will receive:

1. THE 52 ISSUES OF 1923 GBC
2. ALL REMAINING 1922 Weekly Issues
3. The Companion Home Calendar for 1923

ALL for $2.50

THE YOUTH'S COMPANION, BOSTON, MASS.

How a Beekeeper Got Back $2.21

Illustrating Root Service

F. L. Burleson is a beekeeper at Spear, N. C. Last May he ordered from the Norfolk branch of The A. I. Root Company a shipment of hives, supers and sections. This shipment was promptly made to Mr. Burleson at Spruce Pine, N. C., one of his shipping points, and his postoffice address, Spear, N. C., was also very carefully marked on the shipping crates.

The railroad company delivered the supplies at Spruce Pine, but neglected to inform Mr. Burleson at his home at Spear, that the goods had arrived and were awaiting him at the Spruce Pine station, 12 miles from his home. For four weeks the shipment remained there, and during this time Mr. Burleson repeatedly inquired of the railroad employees if his goods had been received at Spruce Pine station and was told they had not arrived. He then complained to The A. I. Root Company, and a ''tracer'' was at once put on trail of the shipment which was found to have been delivered at Spruce Pine a month previously.

To make a long story short: Mr. Burleson then got his much-needed bee supplies, but had to pay the railroad $2.21 overtime storage charges before the station master at Spruce Pine would release the goods to him. In writing to The A. I. Root Company, Mr. Burleson chanced to mention that he thought the storage charges were unjust. He did not ask The A. I. Root Company to take the case up with the railroad—but, our Company, unasked, did take the case up with the railroad officials. Our traffic manager, who is an expert in all shipping matters, wrote the railroad company a half dozen letters, presenting all his carefully gathered evidence of the railroad's neglect.

On October fourth, the Superintendent of Transportation of the railroad fully acknowledged its error, and paid back to Mr. Burleson the $2.21 unjust storage charges.

This is only an every-day example of Root ''service'' to its patrons. Whether it is $2.21 or $1,000.00 that is involved, Root ''service'' is at your service and it equals ''Root Quality.'' Both are yours when you deal with us or our dealers.

The A. I. Root Company

Medina, Ohio, U. S. A.
West Side Station

Fifty-two Years in the Beekeeping Business